FIRE ENGINEERING

OHIO STATE UNIVERSITY
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The Journal of the Fire Protection Profession Since 1877

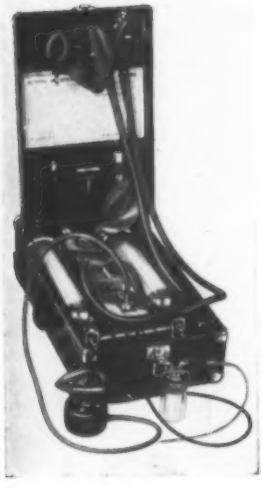
NOVEMBER, 1945

Falling Wall at Philadelphia Fire Takes Power Wires with It

A CASE - SHEPPERD - MANN PUBLICATION

1 EMERSON RESUSCITATOR to EVERY 19 SQUARE MILES—

—on LONG ISLAND



★ ★

Write for literature or a demonstration before your rescue squad.

87 units covering 1680 square miles

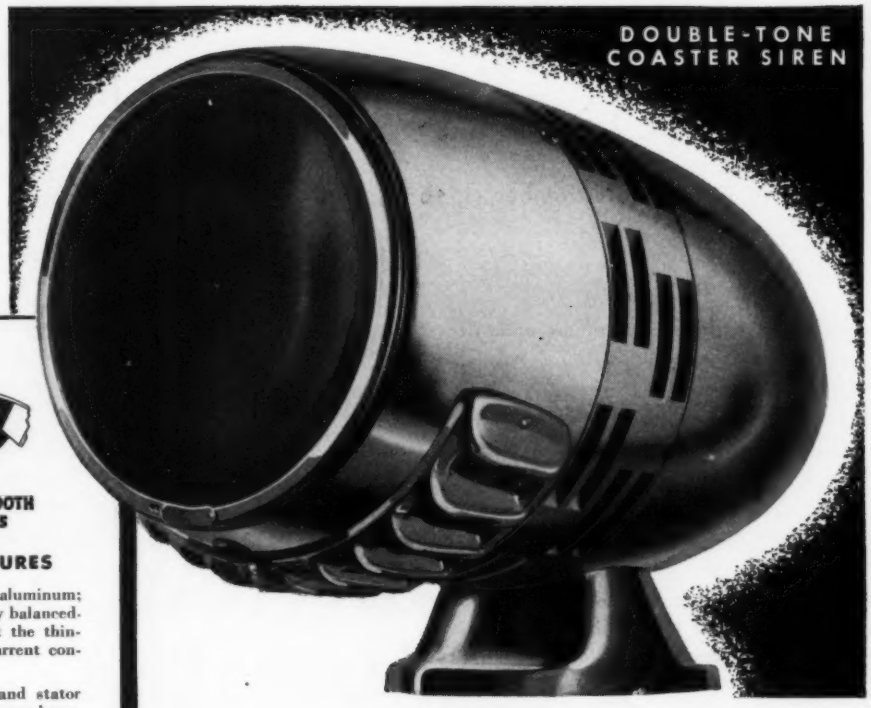
That is the splendid record of concentration of Emerson Resuscitators on Long Island. This makes for minimizing asphyxial death in this region and presents a goal for every community in America to work for.

J. H. EMERSON COMPANY

Representatives in Principal Cities

22 COTTAGE PARK AVENUE • CAMBRIDGE, MASS.

How POWER is built into this FEDERAL VEHICLE COASTER SIREN



FEDERAL SIREN FEATURES

Rotor: die-cast zinc alloy or cast aluminum; precision machined and individually balanced. Large air volume slips easily past the thin-smooth rotor blades; minimum current consumption.

Ports: knife-edge ports in rotor and stator assure sharp, true pitch, tremendous volume. Accurately spaced, carefully machined for tone quality, clearness, and power. Number of ports balanced with motor speed for high efficiency.

Coaster Brake: stops roll, and sound, instantly; operated by separate button on dash. This is actual electric solenoid brake on the rotor; no harmful reversing of motor.

Motor: heavy duty, long life; low friction bronze or ball bearings; 6 to 12 volt models.

Flashing Red Light: other models with oscillating red light driven by separate motor; no external parts to freeze or jam; swings horizontally; no wasteful up-and-down motion.

FEDERAL Coaster Siren

Federal sirens have a tremendously powerful tone that demands attention, clears the way. This model has a clear-cut distinctive double tone; and coasts almost two minutes after current is off.

This is a true coaster type. Special clutch mechanism releases the rotor, allowing it to coast much longer than so-called "long-roll" types, which seldom roll over 30 seconds. Siren can be stopped instantly with the electric brake, which is available if desired.

A wide choice of Federal sirens is available—with oscillating or flashing lights; single or double tone; special brackets available for roof or fender mounting. All are durably built and precision-machined for long service and powerful clear-the-way tone. For fire, police, ambulance, general alarm, and industrial use. Write for illustrated bulletin on types you need.

Get this Bulletin FREE

Details, illustrations and prices on this and other types of Federal sirens. *Write today.*

FEDERAL ELECTRIC COMPANY, INC.

SIREN HEADQUARTERS

8702 SOUTH STATE STREET, CHICAGO 19, ILLINOIS

FIRE ENGINEERING

A Consolidation of FIRE AND WATER ENGINEERING, THE FIRE ENGINEER, FIRE PROTECTION *and* FIRE SERVICE

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FRED SHEPPERD
Editor

ROI B. WOOLLEY
Assistant Editor

There IS Something New—and Deadly—Under the Sun!

LAST month in Nashua, New Hampshire, scientists stunned a large audience of fire officials with a dramatic demonstration of the lethal possibilities of a hitherto unknown plastic substance found in numerous common household articles, when subject to heat.

- Householders — and firemen who must fight fires in their homes — may face a new, deadly menace as part of the chemical and plastic era into which we are entering.
- An editor of Fire Engineering was on hand at that Nashua demonstration and, as a result, Fire Engineering brings to the fire service the first account of melamine, the plastic substance in question.
- In this same issue, Fire Engineering also brings its reader family(*) a number of other "firsts"—in keeping with the progressive publishing policy established 'way back 68 years ago this month when Fire Engineering was launched.
- *"You'll find it first in F.E."* is more than a trite phrase — it's a truism! And it applies to manufacturers' product and announcement pages as well as it does to the editorial news contents.

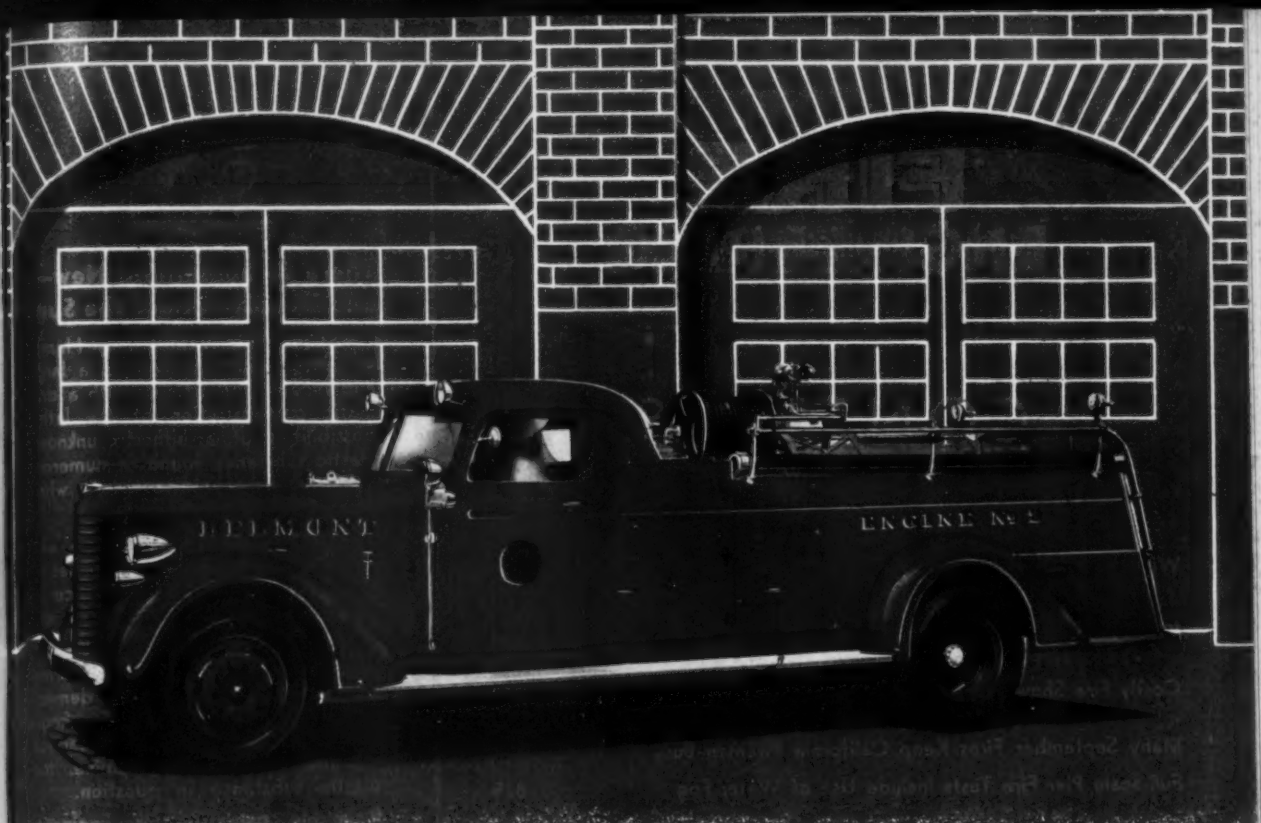
(*) *A "family" that is growing by leaps and bounds since the war's end!*

The Publishers

FIRE ENGINEERING

The Journal of the Fire Profession since 1877; published on the fifteenth of each month by Case-Shepperd-Mann Publishing Corp., 24 West 40th St., New York 18, N. Y., also publishers of *Water Works Engineering, Sewage Works Engineering*, etc. ¶Subscription price U. S. and Latin America, $2.50 a year; Canada, $3; Foreign, $3.50; Single copies, 25c. ¶Member of Audit Bureau of Circulations and Associated Business Papers, Inc. ¶Entered as second-class matter April 15, 1929, at the Post Office at New York, N. Y., under Act of March 3, 1879. ¶Contents of this issue copyrighted, 1945, by Case-Shepperd-Mann Publishing Corp. President and Advertising Director, KARL M. MANN; Vice-President and General Manager, I. HERBERT CASE; Secretary and Editorial Director, FRED SHEPPERD; Assistant Advertising Director, WALTER H. FREDRICKS; Advertising Manager, WILLIAM J. GIBSON; Circulation Manager, W. H. TOPHAM. CHICAGO OFFICE: W. S. CLEVENGER and L. M. ROCHE, 6 No. Michigan Ave., Chicago 2, Ill.; SAN FRANCISCO: CHARLES H. WOOLLEY, 605 Market Street, San Francisco 5, Calif.; LOS ANGELES: AUGUST HAURIN, 6000 Miramonte Blvd., Los Angeles 1, Calif. ¶Printed in U. S. A.

A CASE-SHEPPERD-MANN PUBLICATION
"*Specialized* Leadership"



ReVere Type 750 G.P.M. Triple Combination recently delivered to the city of Belmont, Mass.

BUFFALO
better-built

SAFE

CLEAN STREAMLINED BODIES

1895-1945
GOLDEN ANNIVERSARY
50 Years of Service

BUFFALO FIRE APPLIANCE
CORPORATION
M & T BUILDING, BUFFALO 2, NEW YORK

Only the Scott

1 READY INSTANTLY

Completely donned in less than one minute. No lengthy and worrisome makeready time.

2 INVIGORATING COOL AIR

You bring fresh, cool air to the hazard—don't refine it at the scene.

3 NO LENS FOGGING

Absolutely clear lenses while using the pure, cool breathing air prevents all fogging.

4 FULL-VISION FACE SET

Willson mask approved by Bureau of Mines. Clear vision in all directions, shatter-proof lenses, light weight, comfortable.

5 FREEDOM OF MOTION

Carried easily, conveniently, and always in a balanced position. No hindering of normal movement. No air feed lines to snarl.

6 LIGHT WEIGHT

Sling type, 11 cu. ft. unit complete only 9½ lbs.; 28.8 cu. ft. complete assembly only 28 lbs.; 38.4 cu. ft. complete assembly only 33 lbs.

7 LONG CYLINDER LIFE

38.4 cu. ft. cylinder, one hour breathing air under normal conditions. 28.8 cu. ft. cylinder, 45 minutes under normal conditions. 11 cu. ft. sling type unit, 16 minutes under normal conditions.

8 COMPLETE PROTECTION

Complete protection in all breathing hazards except where atmospheres poison through the skin.

9 WORKING EQUIPMENT

All-purpose working equipment—not just rescue apparatus.

10 LUMINOUS AIR GAUGE

High pressure gauge provides 100% safety factor above the normal charging pressure of the cylinder.

11 COMFORTABLE HARNESS

2½" neotexed cotton webbing with snap clips and self-locking slide buckles permits quick adjustment to any size torso.

12 QUICK CONNECT AIR SUPPLY CONSERVOR

Exclusive Air-Pak feature. Permits breathing through open end of face hose until entering hazard area. Conserves air supply.

13 TESTED HUNDREDS OF THOUSANDS OF HOURS

Over 100,000 of essentially the same assemblies were produced for the Army Air Corps and used in high altitude flying, the greatest service test imaginable.

14 UNDER-WATER APPLICATION

Free, easy, under-surface breathing. Tested and proven safe in water to depths of 35 feet. Exclusively an Air-Pak feature.

15 2 MODELS—SAME FEATURES

Back pack and sling type units embody the same important safety and construction features—vary only in size of compressed air cylinder.

The sling type model contains 11 cu. ft. of free air, stored at 1800 lbs. pressure.

. . . BREATHE FRESH COOL AIR IN EVERY BREATHING HAZARD

Air-Pak gives you ALL 15 POINTS of SUPERIORITY in EVERY BREATHING HAZARD

The Scott Air-Pak is a self-contained breathing apparatus which delivers to the user, through a demand-type regulator, fresh, cool breathing air —not oxygen—for every breathing hazard. The air supply is carried to the hazard under compression in a strong, light-weight cylinder. No chemicals are used. No rebreathing of stale air. The basic principle of the Scott Air-Pak design is the same as utilized by many thousands of our Air Force flying personnel who have had to depend on this type of equipment for life itself during all high altitude missions. The Scott Air-Pak is made in both back and sling types.

The first principle and design innovation in self-contained breathing apparatus in many years, the Scott Air-Pak offers a wide variation in fire department and industrial use both as working equipment and for emergency or rescue work. Ideal also for police and park departments, marine, railroad and truck carriers and for laboratory and general use. Popular with all who have tested it because of its light weight and long dependable air cylinder life. Every safeguard has been provided in the complete apparatus. Write today for 12-page illustrated catalog giving the complete details and specifications of the various Scott Air-Pak units. Scott Aviation Corporation, Safety Equipment Division, 207 Erie St., Lancaster, N. Y.

MAIL THIS COUPON FOR FREE ILLUSTRATED CATALOG—TODAY!

SCOTT AVIATION CORPORATION, Safety Equipment Division, Lancaster, New York

Gentlemen: We desire to take advantage of your offer to demonstrate the SCOTT AIR-PAK *at no obligation to us.* We are interested in your Air-Pak for:

(1) Emergency Use_____ (2) Working Equipment_____

If you desire catalog only check here ☐

Name_____ Title_____

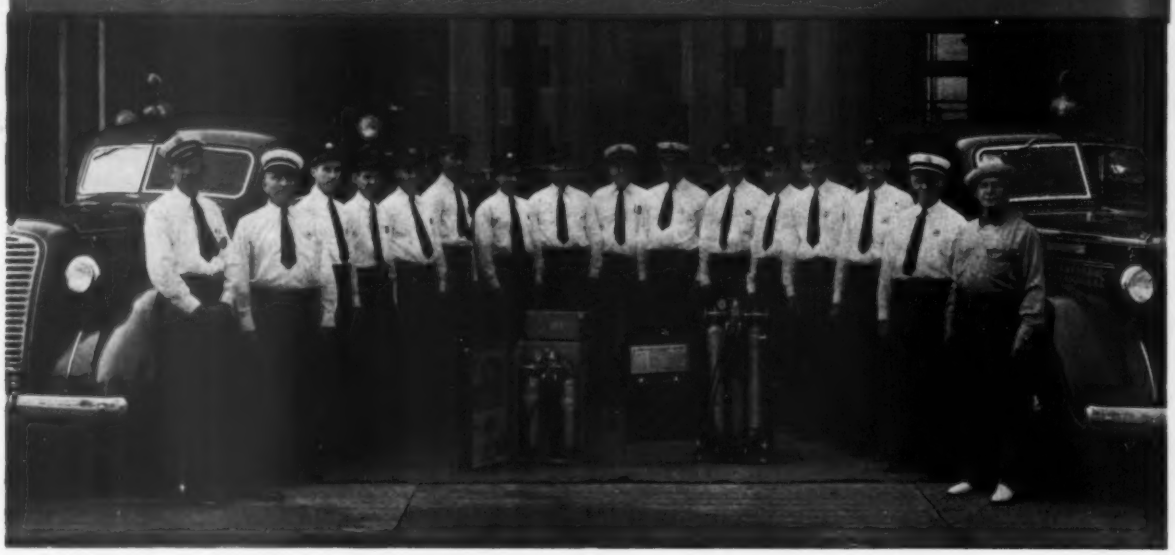
Name of Business_____

Address_____

City and State_____ Telephone_____ Ext._____

WRITE TODAY FOR FREE DEMONSTRATION

INDIANAPOLIS —



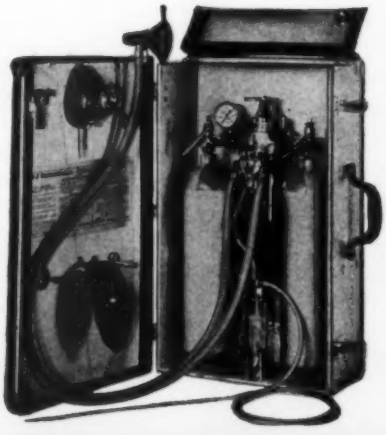
Another Progressive User of

The E & J RESUSCITATOR INHALATOR and ASPIRATOR

Whenever there is a life-saving emergency in Indianapolis, you are likely to find an E & J Resuscitator, Inhalator and Aspirator on the job. The Fire Department (as shown above) has two E & J units, the Police Department a like number, and city hospitals another five.

This is typical of the widespread acceptance of E & J equipment throughout the nation in communities large and small.

Nothing is more important than the saving of lives. And in life saving there is nothing more important than dependable equipment. That the E & J is so widely used the country over is significant!



★ *For further information write to any of our distributors listed below.* ★

E & J MANUFACTURING CO., GLENDALE, CALIF.

Drexel Bldg., Philadelphia — 17 East 42nd St., New York City — 530 Fernando St., Pittsburgh — 8900 Grandy Ave., Detroit, Mich. — 581 Boylston St., Boston — 2104 No. Springfield Ave., Chicago — 3032 W. 25th Ave., Denver, Colorado — 5005 Euclid Ave., Cleveland, Ohio

Pioneers and Specialists in Mechanical Artificial Respiration

for MACK MANUFACTURING CORPORATION, FIRE ENGINE DEPARTMENT, EMPIRE STATE BUILDING, NEW YORK 1, N. Y.

Performance Counts!

North Arlington's latest is a Mack

THIS new 750-gallon triple-combination pumper was recently delivered to the Fire Department of North Arlington, New Jersey. It's a standard Type 85 Mack equipped with a semi-cab.

Mack's great engineering resources, unmatched in the industry, can develop the solution to any special needs you may have. And in meeting your basic need for ruggedness and reliability—for apparatus you can trust—the experience of 35 years shows you can't beat a Mack.

MACK MANUFACTURING CORPORATION, FIRE ENGINE DEPARTMENT
EMPIRE STATE BUILDING, NEW YORK 1, N. Y.

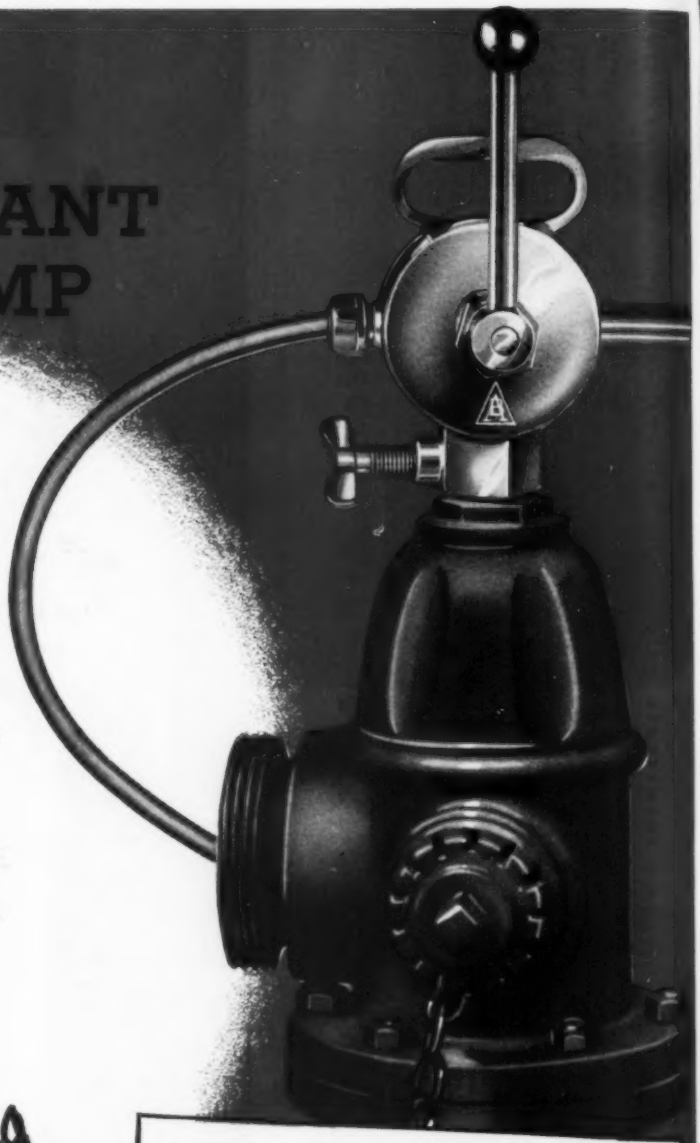
Mack
FIRE
APPARATUS

If your community needs additional fire-fighting equipment or replacements, think of Mack. Remember, Mack Fire Apparatus is backed by the greatest engineering resources in the industry.

Performance Counts!

Please mention FIRE ENGINEERING *when writing advertisers*

AKRON HYDRANT PUMP



Without water fire fighting equipment is worthless.

Hydrant drains clog — hydrants freeze.

Result is needless loss of life and property.

Guard against this fire hydrant hazard by using the Akron Hydrant Pump.

AKRON BRASS MFG. COMPANY, Inc.
WOOSTER, OHIO

Style A 592 AKRON HYDRANT PUMP

Self priming and sustaining action.
Light and portable — 6 lb. weight.
Capacity 6 gallons per minute.
Adjustable to all sizes and shapes of hydrant nuts.
Complete with base and hose.
For all fire department service or commercial use.

AKRON BRASS
FIRE FIGHTING EQUIPMENT

THE METROPOLITAN

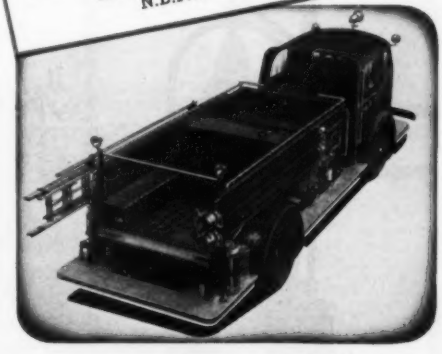
ENGINEERED FOR YOUR JOB by AMERICAN-LAFRANCE

A pumper scientifically designed and engineered from front bumper to rear step. In our nation wide survey you furnished suggestions and ideas that called for a marked change from pre-war designs. American LaFrance engineers have met this challenge and we now offer this new post-war pumper to meet your requirements.

You Asked For

- **MORE VISIBILITY**—We have given the driver (and two more) a front seat.
- **SHORTER TURNING RADIUS**—The wheel base is shortened to 160 inches (150 inches on 500, 600, and 750 G.P.M. pumpers).
- **NARROWER FRONT**—It's only 88 inches over the fenders on these new post-war pumpers.
- **MORE UTILITY**—We have given you that, too. More equipment compartments and more space to mount equipment where it is accessible.
- **MORE ACCESSIBLE UNITS FOR SERVICING**—We have done that. The engine, for example, no big fenders to climb over.
- **MORE SEATING CAPACITY**—We seat five men, either open or cab type.
- **FRONT SUCTION**—We offer it now as an option, engineered into the basic design.

THE WORLD'S FINEST
1250 GALLON PUMPING ENGINE
also available in all standard
N.B.F.U. capacities



Large hose body—will hold 1600 feet of 2½ inch hose; larger water tank—150 gallons; added equipment storage—One large 54 x 68 x 12 inches plus four weather-proof compartments.

Yes The new post-war American-LaFrance pumpers are engineered to meet your most exacting requirements.

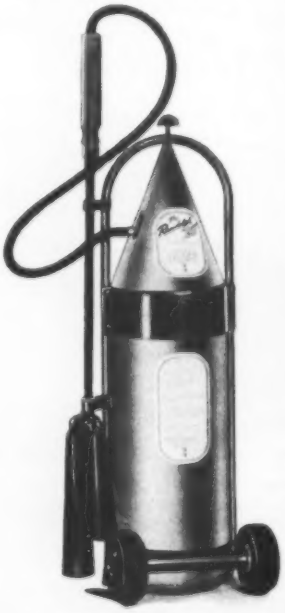
AMERICAN-LAFRANCE-FOAMITE CORPORATION
ELMIRA, NEW YORK, U. S. A.
LAFRANCE FIRE ENGINE AND FOAMITE LIMITED
TORONTO, 9, ONTARIO, CANADA

A 2 GALLON NAPHTHA FIRE...STOPPED COLD IN 17 SECONDS!

Sixty-four feet of burning NAPHTHA! A dangerous blaze — but under actual tests, Randolph "25" K.O.'d it—in a smothering, heavy blanket of carbon dioxide gas.

This 25-pound extinguisher, mounted on wheels, insures mobile protection against *severe* flammable liquid and electrical fires; enables one man to stop wide-spread flames—instantly!

The palm-trigger release, centered on the extinguisher handle affords panic-proof, one-sweep action.



"NO INSTRUCTIONS NEEDED WITH THIS EXTINGUISHER!"

Lightweight and easy to use, Randolph "4" is designed for the *average employee.* Just ONE HAND snaps this unit from its bracket . . . one trigger-touch sends icy, penetrating carbon dioxide deep into the blaze — smothers flammable liquid and electrical fires in *split-seconds!*

A dry, odorless gas, carbon dioxide cannot damage equipment or conduct electricity. It leaves no stains or liquids.

See, by demonstration, how Randolph equipment can mobilize *your* fire defense. For fire protection guidance and prompt delivery, call your supplier or write—

RANDOLPH LABORATORIES INC.

8 EAST KINZIE STREET
CHICAGO 11, ILL., U. S. A.

FAST ATTACK! YOU CAN MOVE IN FAST WITH FMC HIGH-PRESSURE FOG!

No Delay! You are Ready to "Go" the Moment You Arrive at the Fire

The FMC High-Pressure Fog Fire Fighter carries its own water supply and complete fire fighting equipment. So — you are ready for instant action.

There are two fog guns of 30 gallons each at 600 lbs. or more nozzle pressure. The flow of these guns can be adjusted to produce any type of fog formation that may be needed — from a wide, dense fog pattern to a straight power stream.

It's the Pressure and the Pump!

The FMC High-Pressure Pump — built by Bean — packs the needed punch to produce and maintain *800 lbs. pump pressure*— better than *600 lbs. nozzle pressure.*

The high-pressure provides a combination of high velocity and finely atomized water — just what you need to *blast, cool* and *smother* flame.

One gallon of this steam-like water fog, properly used, has fire quenching possibilities many times that of low pressure water.

Restrictions Lifted!

Investigate this revolutionary method of fire fighting. It's not a bit too early to start plans for the modernization of your department.

FMC High-Pressure Fog Fire Fighters may now be purchased for civilian use. Orders should be placed promptly to insure early delivery.

YOU CAN MODERNIZE — NOW!

Illustration shows latest type Standard FMC Fog Fire Fighter.

FMC *Original* HIGH-PRESSURE FOG FIRE FIGHTER

CAN BE MOUNTED ON MOST STANDARD TRUCK CHASSIS

FOOD MACHINERY CORPORATION

JOHN BEAN MFG. CO., 709 HAZEL ST., LANSING 4, MICH. • BEAN-CUTLER DIVISION, 409 JULIAN ST., SAN JOSE, CALIF.

BUILDERS OF BEAN HIGH-PRESSURE PUMPS FOR OVER 60 YEARS

FOAM FOUGHT KAMIKAZES
—and Won!

Jap Kamikaze diving on carrier. How foam blanket quickly extinguishes serious fires aboard ship. Arrows point to cans of easily applied "bean soup"

Official U. S. Navy Photo

National's Aer-O-Foam which helped save Navy Carriers, now ready for all industry.

The U. S. Navy used foam (developed and largely supplied by National Foam System, Inc.) to quickly extinguish sudden, serious fires set by Jap suicide pilots. It is now available to private enterprise—with particular emphasis in the petroleum, chemical, aviation and other industries.

Fires in peacetime can start as unexpectedly and prove as disastrous as those set by Kamikazes. But with foam now available to all industry as a thick, tough and enduring blanket quickly smothering fire, industrial properties can be saved as surely as were our carriers by Navy "bean soup".

National Foam clings to vertical surfaces as well as horizontal, insulating threatened areas as thoroughly as it lays a gas-tight blanket over flames—quickly extinguishing fire and preventing flashbacks.

Wire, telephone or write today to learn how you can guard your property from fire as effectively as National Foam helped Uncle Sam protect his Navy.

IN FIRE DEPARTMENT SERVICE

National Foam System has equipment especially designed for use of Fire Departments to meet all types of foam fire fighting requirements.

NATIONAL FOAM SYSTEM, INC.

SPECIALIZING IN FOAM FIRE PROTECTION

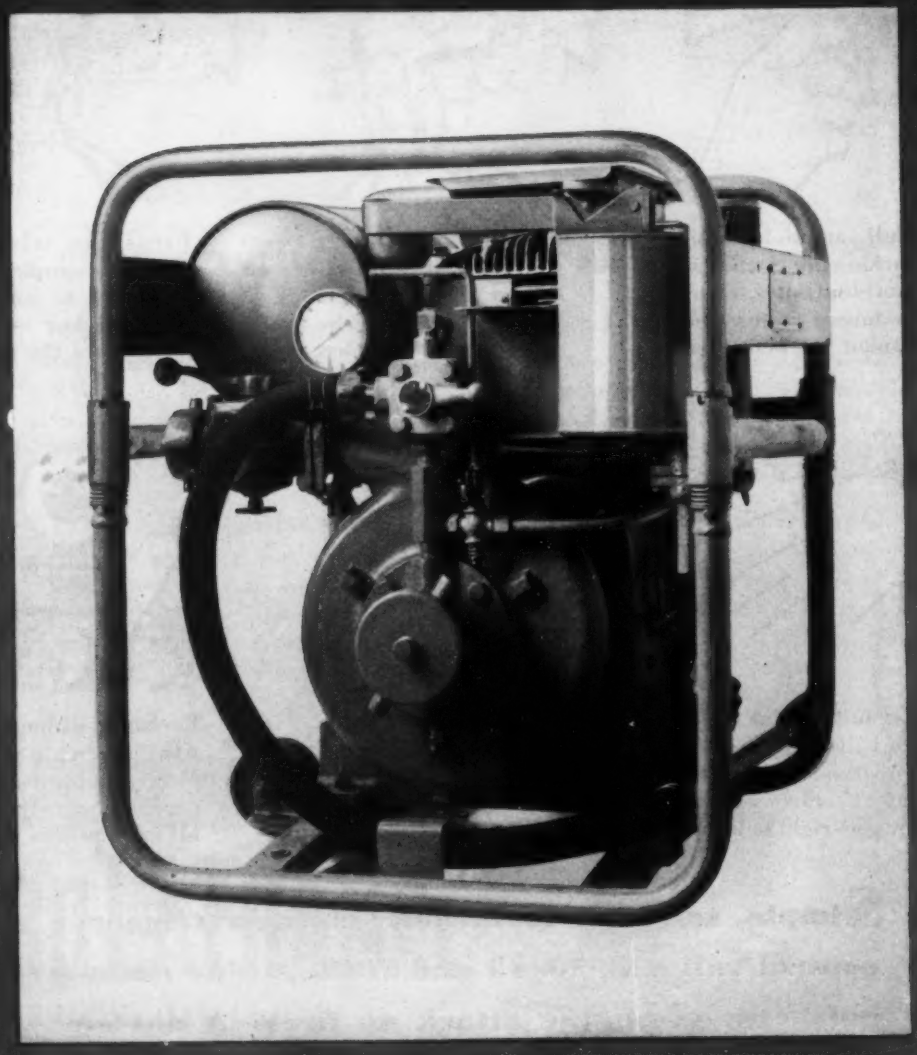
Packard Building, Philadelphia 2, Pa.

Announcing the NEW

HALE TYPE FZZ

A Complete Pumping Unit Ready For Use

COMPACT—POWERFUL—PORTABLE



For Complete Details Write—

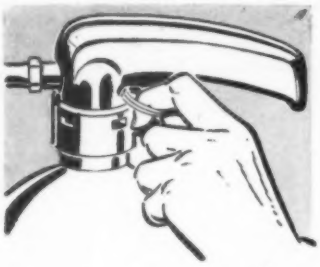
HALE FIRE PUMP COMPANY

CONSHOHOCKEN, PA.

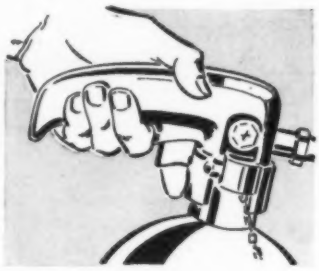
INQUIRIES INVITED From Dealers Interested in Selling This Unit

Here's the HOW . . . and the WHY of TRIGGER-FINGER CONTROL

(Soon available on 10, 15 and 20-lb. Fire Extinguishers)

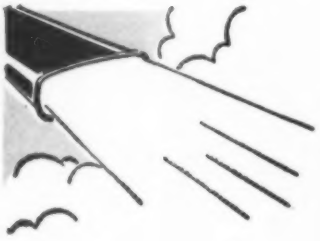


1. Pull out non-jamming locking pin. Seating in two blind holes, it can't be turned . . . the ends cannot get bent over.

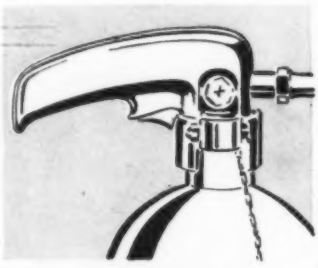


2. Pick up easy-to-carry extinguisher. Balanced design and low center of gravity make carrying job simpler.

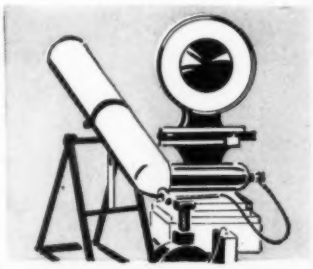
3. Press the trigger. That's the simple, *natural* way to operate extinguisher — one finger does the trick.



4. Get full flow at once. No half-way measures with this fast-starting valve . . . carbon dioxide goes right to work!



5. Lock open—if desired. Just move trigger forward slightly to latch it in open position—no danger of fouling.



6. Recharge without replacement parts. Merely connect carbon dioxide supply and fill extinguisher up.

Simple, safe and foolproof, this new trigger-control valve on 10, 15 and 20-lb. Kidde extinguishers speeds the attack on fires. A novice can operate it! Write for the full details today.

Walter Kidde & Company, Inc., 1133 Main Street, Belleville 9, New Jersey

Kidde

The word "Kidde" and the Kidde seal are trade-marks of Walter Kidde & Company, Inc.

Kidde

CONSIDER WARD LAFRANCE FIRST

SHORT TURNING RADIUS
Front axles have exceptionally wide tread, providing high wheel deflection. This assures short turning radii so essential in communities having narrow streets.

NEEDLE BEARING DRIVE SHAFTS
Drive shaft construction reduces friction to a minimum. The type of joints used are designed to provide efficient power transmission even under high angular alignment.

POWERFUL SIX-CYLINDER ENGINE
Every piece of apparatus is equipped with a heavy-duty six-cylinder engine designed for actual use of rated horsepower and built especially for fire service.

CAM AND LEVER TYPE STEERING
Steering gear is mounted on the top of the frame for ready removal. Gear sizes are proportionate to the weight and tire sizes on the front axle system.

EXTRA WIDTH FLANGE ON FRAME
Side rails are made from highest-quality pressed steel. The extra width flange provides an unusually strong frame rail and increases load-carrying capacity.

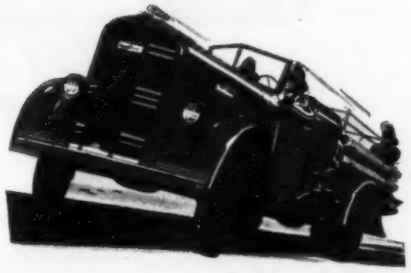
TWO-STAGE CENTRIFUGAL PUMP
Upper halves of the pump and transmission case are bolted to the lower half by one horizontal flange only. Can be disassembled in the chassis.

WARD LAFRANCE

TRUCK DIVISION

GREAT AMERICAN INDUSTRIES, INC.

ELMIRA NEW YORK



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FIRE ENGINEERING

NOVEMBER, 1945 VOL. 98, NO. 11

With the Editor

There Ought To Be a Law! The disclosures of a group of New Hampshire scientists, at the recent Nashua conference of the New Hampshire and New England fire chiefs, that a substance termed melamine, used as a base for innumerable household and other plastic articles now on the market, and in prospect, gives off deadly cyanide gas when the product in which it is incorporated is subjected to heat, should receive immediate and careful consideration of the fire service.

If it is true, as claimed by these scientists and outlined in the Nashua story in this issue of FIRE ENGINEERING, that tomorrow's average household may contain as much as five pounds of the deadly stuff hidden in every kind of product from kitchenware to tissue paper and draperies, and that a fire in such a household may prove deadly to occupants, and to firemen attempting to fight it, by reason of the odorless, tasteless cyanide gas generated in the combustion process, then the fire service faces a very real threat.

Those who saw the dramatic demonstration in Nashua where a large rat was killed in thirty seconds by cyanide gas generated from the baking of a bit of plastic incorporating melamine, will not soon forget it or its significance.

If it is true, as we have been told, that we are entering the plastic age, and if tomorrow's almost limitless plastic products are to include in their formulæ substances like melamine possessing such deadly possibilities for firemen and householders, there certainly should be a law or laws regulating and controlling its use.

Building a Better America The American Institute of Architects in a recent news release pledges its support of efforts for the "building of a better America." Says the Institute, "the architectural profession can give material support to efforts for a better America. Architects and builders will be confronted with many new demands from the public for the next few years; technological advances accelerated by the war will affect the design and construction of homes and all other structures in the postwar era; prospective home owners . . . are not going to be satisfied with 'just houses'—any sort of standardized, 'jerry-built' structures."

The fire service will be quick to applaud these sentiments and the Institute's pledge, but it will be pardoned if it does so with certain reservations. It hasn't altogether forgotten the good intentions that followed World War I, and that have come on the heels of almost every great conflagration.

The fire service would be the first to vote the architects and builders of this nation orchids if the latter would consider safety from fire a major objective in the building of a better America. Meanwhile, we'll go on fighting on the residential, commercial and industrial fronts for such worthy construction objectives as greater use of fire-safe materials; more fire-stops; and all the other life and property saving improvements advocated by the fire service, the National Board of Fire Underwriters and public service organizations almost without end.

Fred Sheppard

Impact of Wartime Fire Defense Upon Peacetime Fire Fighting

Further Details of How Municipal Fire Services May Benefit From the Navy's Wartime Fire Suppression Experience

By COMMANDER HAROLD J. BURKE

THE United States Navy is most anxious to cooperate with Municipal Authorities, industrial firms and others having fire protection problems to give them the benefit of the Navy's war time experience with fire. The research and test projects leading to the development of the United States Navy Fire Fighting Equipment and Techniques were conducted on a large scale.

Individually no municipality could finance research on such a gigantic scale. It was made possible through American tax dollars. While secrecy was necessary during the war the Navy now desires to make that information available to all who have a legitimate interest.

Water-Fog Advances

No doubt firemen are most anxious to learn what the Navy has developed during the war that may be used with effectiveness in their local municipalities. No. 1 on that list will be the Navy's experience with fog spray. Fog nozzles were in use before this war. The Navy does not lay any claim to having invented them; however, the Navy did develop the so called "all-purpose fog nozzle." This is a three-position nozzle which will permit the operator to discharge water in the form of finely diffused spray or fog in one position, in the form of a solid stream in a second position, or shut the stream off entirely in a third position, all by manipulating a single control handle. Once the discharge from the Navy all-purpose nozzle is set in the fog position, it can not be adjusted; however, discharge is set for maximum effectiveness. There are types of fog nozzles which are adjustable and in the hands of professional firemen these should produce results comparable to the Navy product. However, our problem was to put a piece of equipment in the hands of relatively untrained and unskilled men who could not change the characteristics of the fog by tampering with the nozzles, as might be the case in the excitement of a fire.

The characteristics of the water fog discharge of fog nozzles are all important. If the water is not finely diffused, homogeneous and without voids, it becomes a spray and is relatively ineffective. If it becomes too finely diffused under extremely high pressures it does not carry enough quenching or cooling effect.

Let us consider the basic principle underlying fog for a moment. One pound of water will absorb 977 BTU's. By breaking up a solid stream into diffused fog or spray, we present a tremendously increased surface area; consequently we most nearly approach the maximum or optimum rate of absorption. This, then, is why the water fog is able to absorb such tremendous amounts of heat. It accounts for the ability of fire fighters operating behind such equipment to approach very close to the seat of a fire regardless of its intensity.

Like every other piece of equipment, in order to obtain the best service, it is necessary to realize its full possibilities and limitations. Fog distinctly is not a cure-all for all fires nor will water-fog alone extinguish a large scale gasoline fire. It will, however, control the combustion so that a close approach is possible, but in order to effect extinguishment completely, it is necessary to use foam or fog-foam. In municipal use it permits a fire company to reach the very seat of a fire and to attack it without severe physical punishment.

However, it should be borne in mind that ventilation is necessary. When using water fog the attack should be made from one direction only and ventilation should be provided at the point toward which the attack is progressing. This is particularly necessary when attacking fire through a long passageway or corridor or it may be found that the gases of combustion have been compressed to a point where they will overcome the ability of the fog to restrain them and will flash around the fire party. If ventilation is provided, however, it is remarkable to see the ease and speed with which a floor may be cleared of smoke and the very heart of the fire reached. This perhaps is one of the outstanding possibilities of water fog.

Effectiveness in Fixed Installations

The performance of water-fog in fixed installations is also remarkable. Tests were made at Findlay, Ohio, with such an installation in a 93-foot diameter tank. This tank contained a quantity of crude oil, which was ignited. The water fog was controlled by a heat-actuated device which kept the temperature below 300° F all through the fire. Where structural steel is exposed and protected by water fog, we found that in no case was there serious warping or deflection of the structural steel members.

Fog should prove valuable for exposure protection in building fires. Some fires are deep-seated and will require a solid stream for penetration. The Navy all-purpose nozzle provides for this in that the control handle permits an instantaneous switch from fog to a solid stream or from fog or solid stream to a shut off. The case for the Navy all-

In the October issue of FIRE ENGINEERING there appeared an article by Jerry Daly entitled "Navy Fire Fighting Techniques to Benefit City Fire Fighters." This briefly outlined some of the advancements in the science of fire suppression developed by the U. S. Navy. It also told something about the man most resonsible for these developments, Commander Harold J. Burke, U.S.N.R., Chief of the Fire Damage Control Service, Bureau of Ships, and former Deputy Chief of the New York Fire Department.

In this article, Commander Burke discusses the relationship between the Navy's wartime fire fighting progress and the municipal fire service's postwar problems at greater length than was covered in Jerry Daly's October article.

In view of the considerable and widespread publicity being given the application of wartime fire protection procedures and products to peacetime fire suppression in this country, and in view of the importance attached to the statements of Commander Burke, this article, which represents the major portion of an address delivered before the Fire Chiefs' Emergency Plan of Westchester County is published. The editors desire to thank Secretary of the Navy Forrestal, and the Westchester "Plan" as well as Commander Burke, for permission to publish this message, which we believe will be of interest to all forward-thinking members of the fire service.

—THE EDITORS

Official Photograph U. S. Navy

Navy's Revolutionary Type Mask

Rescue breathing apparatus which generates its own oxygen—a Navy "war-developed product" that will shortly be available to the municipal fire service.

purpose nozzle can be briefly summarized as follows:

It is in one a controlling nozzle which will produce a solid stream or water-fog instantaneously as desired. The operator is always assured of optimum water diffusion.

It is ideal for use on inflammable liquids. It can be used to generate fog-foam in case of gasoline fires. It should result in considerable saving in water damage. It will permit the fireman to reach the very seat of a fire with a minimum of physical exertion and punishment and at maximum speed.

Mechanical Foam Improved

One of the most interesting developments of the entire war has been the development and perfection of mechanical foam. The term "mechanical foam" is used because this material generates foam through a mechanical action rather than a chemical action. It is a liquid and is governed by the same laws of hydraulics as water. Its specific gravity is slightly high, being 1.125. In order to produce mechanical foam, four conditions must be satisfied: First, we must have water; second, the foam liquid; third, air; and fourth, they must be in the correct proportion.

The correct proportion for mechanical foam is 6% of foam liquid by volume to water. The air may be introduced through aspirating cages or even entrained into the streams by the action of the impinging jets after the water has actually left the nozzle. Mechanical foam can be introduced into a water stream at the suction side of a pump, at the discharge end of a hose line through a pick-up tube or at an intermediate point in the line through a proportioner-pump, or by using a duplex pressure proportioner. The foam so produced is more fluid, flows more readily around machinery foundations, through lightening holes in vessels and is generally superior to chemical foam.

The foam liquid is made from a variety of proteins running all the way from soy beans to horn and hoof meal and even fish scales. More recently foam has been made from dried animal blood. As a matter of fact almost any protein (vegetable or animal) can be used to make foam if properly treated and processed.

United States Navy specification foam has a relatively low expansion rate, of from 6 to 8. We prefer this expansion because it provides a more permanent blanket. Higher expansion foam generally breaks down much more rapidly and exposes the surface of the oil to reflash. This is particularly true when surrounded by heated metal bulkheads.

Pick-Up Foam Nozzle

The standard Navy foam nozzle is fitted with a pick-up tube through which foam-liquid can be drafted from the 5-gallon container in which it comes packaged. Speaking in the terms of municipal fire protection, this means that 3 or 4 cans of foam liquid on each ladder truck, plus one or two nozzles, will provide foam protection for the average oil or gasoline hazard, such as encountered in a garage, dry cleaning establishment, or filling station. In those areas where tank farms or oil refineries are located, some of the more elaborate equipment should be furnished, in fact the proportioner pump in the 500-gallon capacity size is light enough to be completely portable and is capable of furnishing 500 gallons of foam in liquid form each and every minute. Since the expansion rate is from 6 to 8, this means that between 3,000 and 4,000 gallons of foam a minute can be produced through this piece of apparatus. The unit weighs but 185 pounds and would provide excellent auxiliary equipment for use in connection with the ordinary fire department pumpers. It is also possible to use mechanical foam in a premixed state, as long as 6% of the foam liquid by volume is mixed with 94% of water. The combination will furnish a very satisfactory foam and can be discharged through a regular fog nozzle or through other equipment.

Navy Rescue Breathing Device

The next piece of equipment which I predict will find extensive post war municipal use is the so-called Navy Rescue Breathing Apparatus. This is an oxygen type of mask which employs a canister. However, it is not to be confused with the all service type mask which is a filter type mask.

The Navy mask is so constructed that the exhaled breath passed over a chemical in the canister will generate oxygen. This oxygen in turn is led to a breathing bag from where it is fed to the wearer in the form of breathable air. Since there is no bottle oxygen and there are, generally speaking, no valves to get out of adjustment, it is not affected by the jars and jolts of apparatus.

This mask will provide complete protection against any gases except those that have skin penetration characteristics, such as ammonia. Of course, in such cases wading pants and the usual skin protection equipment must be used.

Each canister used with the Navy mask is normally good for about one hour of ordinary operation; at an accelerated rate of exertion, the usable time of the container is cut down to about 40 minutes. Containers can be changed instantaneously by the release of a bale device, through which they are held in the canister container. The whole apparatus weighs but 11½ pounds and is compact and should be of utmost value in overcoming smoky and stubborn first alarm fires that often prove so difficult.

It my opinion the combination of the rescue breathing apparatus and the fog spray nozzle provides an ideal team, the first against the smoke hazard and the second against the heat barrier. In combination there is no practical reason

Official Photograph U. S. Navy

Navy's Fire Fighters Learn Their Job the Hard Way

Salty smoke-eaters at Mare Island Fire Fighters' School train with modern tools and techniques developed by Navy Damage Control Service—and lose their fear of fire.

Official Photograph U. S. Navy

What Tomorrow's Fire Fighter May Wear
Two Navy innovations, the portable cutting outfit and large capacity rescue breathing device will be of special interest to modern municipal fire fighters.

why well trained fire companies should not be able to go practically any place desired in a building on fire and with perfect safety. Until recently it was not possible to buy this apparatus commercially because of the security conditions with which the Navy surrounded it.

Portable Cutting Outfit

Another piece of equipment that has proven of a distinct advantage to the Navy in fire fighting is the pack type portable oxy-acetylene cutting outfit. While this is not new in fire department service, the Navy has increased the capacity of the unit tremendously through design changes until now it has quite an increased capacity, improved cutting torch, better portability and weighs but 55 pounds.

Navy Fire Defense Training

Of major concern to the Navy and, I am sure, also a major concern of the Fire Chiefs in this country, is the problem of firemen's training. Fire departments in this country have many fine training schools but in general the instruction is theoretical rather than practical. Shortly after Pearl Harbor, in an effort to make the training of fire fighters in the Navy realistic and actual, we built simulated ships ashore. The hulls of these ships were reinforced concrete and they were lined with brick; however, the interior arrangements, floor plates, ladders, gratings and obstructions closely resembled those which the sailors would find afloat. These structures were arranged so that they could be flooded with oil and ignited.

As a result real fires, more intense in most instances than what the sailor would encounter afloat, were built and it was in these structures that the Navy fighters were trained.

Prior to attacking fires on these so-called ships, the students received a primary course of instruction on 15-foot circular tanks outside. In this way they were able to obtain some idea of the possibilities, range and capacity of the various pieces of equipment that they would use on the ship fire. However, the chief feature of the so-called ships was the fact that the men were taught by doing it.

I see no reason why the same principle cannot be applied effectively in training the fire fighters of our municipal fire departments. It need not be on as large a scale, but at least some sort of a simple structure where actual fires may be built and where the firemen will obtain a baptism of fire and feel the physical hardships of this job, and where he will learn how to get around in smoke and heat, would be invaluable. In fact our larger cities should build training schools that are in reality indestructible buildings, arranged in apartments, cellars, factories and similar occupancies. These structures should be of reinforced concrete and arranged to sustain fires. They should be so constructed that the light, ventilating and elevator shafts are reproduced. Means of egress and all types of fire escapes should be provided. Automatic sprinkler systems and all other fire fighting equipment required by law for that municipality should be installed. After receiving basic or theoretical instructions, the students could then practice on this structure, which would furnish a practical test ground. All sorts of combustible trash could be used for fuel.

I believe in this manner we will be able to produce firemen who are far better trained and have actually experienced more fire than they would have had had they been in ten years' continuous service.

If the structure, such as I describe, is too elaborate and too expensive for any single city to construct, it may be possible to arrange for the construction of such a building on a state wide basis. Under state control, quotas could be set up for individual cities.

The Navy war experiences resulted in an interesting development in the use of foam for fighting fires in oil storage tanks. Prior to this war, most of the foam fire-fighting equipment installed for tank protection was placed over the top. However, in a bombing raid the blast effect caused the demolition or partial destruction of this "over the top" protection. Experiments were then made with injecting foam through the product line into the bottom of the tank. This technique proved to be remarkably effective until now it has been developed to a point where fire may be fought with practically slide rule precision.

Once the physicals of the oil in the tank are known and the amount for surface area involved is determined, it is possible to predict within a matter of a few gallons how much foam liquid will be necessary, within a hundred gallons or so, how much water will be required and within a minute, the length of time it will take to extinguish the fire. Only a slight modification is necessary in the piping of a tank farm to make this system work to perfection. A valved fitting to which hose lines can be connected must be provided in the product line as well as a stop-valve. The connection would be provided for accommodating large diameter hose.

Sub-Surface Application of Foam

Foam should be introduced into this product line at sufficient pressure to overcome the head of the oil in the tank. The foam itself may be generated through the use of venturi generators or through compressed air generators.

The action of the foam in sub-surface application is slightly different than that observed in surface application. The foam acts as a vehicle which carries water up through the heated oil, reducing the temperature as it ascends until it cools the surface. The foam finally forms a seal at the surface.

Through the cooperation of the Standard Oil Company of Ohio, the U. S. Navy recently conducted a series of fire tests in a 93-foot diameter tank at Findlay, Ohio. Crude oil and gasoline

Official Photograph U. S. Navy

A Navy "Land Ship" Burns
Off-shore view of Navy "land ship" at height of large-scale fire which students of Mare Island Navy Yard Fire Fighters' School extinguished in five minutes.

were fired in separate tests. Previous tests had been conducted with fuel oil. These tests proved conclusively that the sub-surface method of application is entirely practical.

It remain to be proved that this is also a practical method of protecting tankers and to that end the Navy intends to obtain the use of an old tanker that is about to be scrapped and will outfit it for sub-surface application and conduct large scale actual service fires to prove the feasibility and practicability of the method.

Another feature of the sub-surface application using mechanical foam is the fact that perhaps no other method or material lends itself so readily to automatic operation. Heat-actuated devices can control an entire system if necessary.

Fog-Foam a War Development

Another interesting development of the war has been the perfection of high capacity fog-foam equipment and technique. Fog-foam means discharging foam liquid solution through large capacity hose and nozzles of the impinging-jet type which have a capacity of 550 gallons per minute or more.

This method of combatting oil or gasoline fires has tremendous possibilities, especially in dealing with large fires in tank and oil refineries.

The "fog-foam," as the name indicates, is foam in a finely diffused form which affords excellent heat protection for the fire party; it is a veritable shield. The special nozzles used are provided with stream-shapers which transform the diffused foam into a solid stream when greater projection is required.

Fighting Cargo Fires

One of the most difficult fires to combat afloat are those in cargo loaded holds of merchantmen. Even the best trained fire department backed with the finest equipment is at a decided disadvantage because the seat of these fires is generally inaccessible.

Let me emphasize that there is no one medium that is ideal for all fires. Each fire extinguishing agent has a distinct field and good fire protection requires the use of all of these agents, each in its proper place and under the proper conditions.

The cargo-loaded hold, because of its inaccessibility, presents a situation where carbon dioxide can be used to great advantage. The technique of this type of fire fighting, to borrow a phrase from Mayor LaGuardia's vocabulary, requires "patience and fortitude." First, it is necessary to determine the cube of the hold; allowance may be made for impermeable masses.

The amount of carbon dioxide required can be roughly estimated as one pound for each 20 cubic feet. Sufficient cylinders of carbon dioxide should be provided to meet this requirement plus about 10% for maintaining the inert atmosphere through the duration of the fire.

The fire department should be prepared for this type of fire fighting by equipping itself in advance with a manifold having Tee check valves that will accommodate a minimum of six 50 pound cylinders of gas and with a metallic frost insulated hose as a discharge line from the manifold. With all of the equipment and gas in readiness

U. S. Army Corps. of Engineers Photo

How Navy Trains for Carrier and Airplane Crash Fires

Twenty airplanes, some with loaded gas tanks, are saturated with 2500 gallons of gasoline on simulated carrier deck—resulting hot fire is extinguished in eight minutes.

a hole just large enough to receive the discharge hose should be burned through the deck and the CO_2 discharged. The total amount of gas required for the cube of the hold should be injected as rapidly as possible. Sources of possible leakage such as hatches and ventilators, should be covered or secured.

After the initial discharge of gas has been completed an analysis should be taken at half hour intervals to determine that the carbon dioxide concentration is adequate. An additional cylinder should be bled into the hold from time to time to maintain the required concentration.

Since carbon dioxide has little cooling effect, it will be necessary to maintain an inert atmosphere for many hours in the burning hold. It is recommended that in the case of serious fires at least 12 hours elapse between the initial discharge and the preliminary investigation of the hold. Such investigation must be made by men equipped with hose masks or oxygen breathing apparatus, since there will be an oxygen deficiency in the hold.

It is important to keep the fire area under a constant concentration of gas and it is likewise important to avoid impatience. Once the hold can be entered, overhauling should proceed by removing any unburnt material or merchandise and landing it or placing in on lighters which may be brought along side. Any material that shows evidence of fire should be left until last. Charged hose lines should be ready in a standby position to quench any small or smoldering fire that may be uncovered.

Generally speaking, the only damage that will result from fires fought this way will be purely fire damage and the water damage will be held to a minimum. In the near future, the United States Navy intends to conduct large scale tests of fires in cargo loaded holds using carbon dioxide for the extinguishing agent.

Dramatizing Training

During the war the Navy has had considerable success in training through the use of audio motion picture films. It seems to me that there is a tremendous field for the development of this training aid in fire department work. Under the supervision of auspices of the International Association of Fire Chiefs it may be possible to produce a series of motion pictures that will show the correct technique and method of fighting all of the various types of fires, the approved method of ventilating and of overhauling structures after fires.

Through the use of such films a standard of good practice may be established. Animation should be used extensively to show clearly and exactly the principles involved. The ultimate result will be the dissemination of authentic information which should in time produce better fire protection generally.

I have only touched the high lights and pointed out some developments that would have particular application in municipal fire protection. There have been other developments, particularly in the field of portable pumping equipment that are most interesting. For example we now have a pump that will deliver 500 gallons per minute at 125 pounds per square inch and yet it weighs but 230 pounds.

Tomorrow's Fire Service

In summation, I recommend serious thought be given to the use of water fog, particularly when discharged from a 2-position nozzle. I predict a wide spread use of this technique. It is not experimental. It has successfully passed through tougher service tests than any city is apt to give it. Coupled with the rescue breathing apparatus, it provides fire departments with equipment that should make it possible to reach the heart of practically any fire with speed and dispatch, but without severe physical punishment so well known and so damaging to firemen. It is silly not to use the breathing apparatus when simple dependable equipment is available.

Mechanical foam affords the most potent extinguishing agent for handling gasoline oil fires.

We must be ready to take full advantage of two-way radio communication including improved "walkie-talkie" equipment.

Pneumatic equipment has tremendous possibilities in the fire service, par-

(*Continued on page 860*)

Costly Fire Shows Need of Fire Prevention Ordinance

Thirty-five Retail Stores Destroyed or Damaged At Battle Creek, Mich., With $500,000 Loss

A STAFF REPORT*

FOUR stores were destroyed, thirty-one other stores and shops sustained losses, when a six hour fire swept the Stone Arcade building in downtown Battle Creek October 3rd. It was the city's costliest fire in its history, the total loss being estimated at between $400,000 and $500,000.

Presumably starting underneath a stairway in the basement of the Nancee Hat Shop, one of a number of stores in the Arcade, from causes not yet determined, the flames spread out of control within ten minutes, eating their way into virtually every one of the retail establishments in the block.

The building involved, known as the Stone Arcade, is located on the south side of Michigan avenue and extends from the Bijou Theatre to the seven-story Post Building. Actually the structure comprises two buildings, the Stone Arcade, erected in 1900 and the Winslow block, to the west, built in 1882. It is understood the alterations to the building, particularly the basement, over the years, contributed to the spread of the fire.

The original partition, between the basement of the hat shop in which the fire is said to have originated and the Kresge store, had been removed and the Kresge basement enlarged so it surrounded the hat shop storage space on two sides. A wooden partition separated the two basements and did not offer much of an obstacle to the flames, which spread rapidly from the hat shop into the Kresge basement.

*Photos by courtesy of W. E. Story, American-Marsh Pumps, Inc., Battle Creek, Mich.

The Premises Damaged

Heavily damaged by fire, smoke and water were: Stone Arcade, $100,000; S. S. Kresge, 25 cents to $1, store complete loss, $110,000; Reeds Shoe Store, $15,000 to $18,000; Martin Gift Shop, $14,000; Nancee Hat Shop, minimum $5,000.

Estimated $150,000 to $250,000 damage to other thirty-one shops and stores including some water and smoke damage to the Robinson Department Store, in the Post Building. These retail outlets are located on the Arcade promenade, and on the balcony or second floor.

The property and occupancy is typical of that to be found in the business section of almost any American city. The combination of old-style, combustible construction with equally combustible contents in almost every retail outlet in the multiple-occupancy, including empty and partially filled cartons and other fast-burning storage that filled or partly filled most of the basements underneath the entire building, accounts for the fast-spreading fire. This is evidenced by the fact that the fire occurred at the busiest time of the day, shortly before 3:00 P. M., when stores and streets were well filled with shoppers and discovery of the blaze was fairly prompt. It is reported that hundreds of store clerks and customers fled early from the block, luckily without disorder or stampede.

Fighting Roof Fire in Arcade Building

Reminiscent of British fire fighting is this view of use of multiple-section metal ladder and ladder pipe.

Evidence of Rapid Extension

The first telephone alarm was received by the department at 2:51 P. M. and four minutes later a general alarm was sounded.

The fire was discovered by an employee of the Nancee Hat Shop when she opened the door to the basement stairway at the rear of the shop and found the stairs afire. With another hatshop employee she ran to the street, calling for someone to summon the fire department. At about the same moment, the automatic fire and burglar alarm in the adjacent Kresge store sounded an alarm. It is reported a stock boy investigated the basement store room but was unable to find any fire. Within a few minutes, however, smoke filled the Kresge store and clerks and customers fled to the street.

Fire Department Operations

Within a few minutes after the general alarm, every piece of apparatus in regular service at the city's four fire stations was on the scene.

Off-duty members of the department were summoned as the serious nature of the fire became apparent. Even some of the department's pensioners and several men who had quit the department in

Retail Store Fire Threatens Downtown Battle Creek

Firemen fight desperately to prevent extension of "Stone Arcade" fire to seven-story Post building.

recent years, including a former lieutenant and a signal operator, volunteered for duty.

At 3:30 P. M., when the flames were menacing the Post building on the west and the Post Theatre at the southwest, Chief Charles Crosier, in charge, summoned help, first from Fort Custer and Kellogg Field departments and later the Percy Jones General Hospital and Kalamazoo fire department.

Kalamazoo dispatched a pumper and ten men under Fire Chief VanAtta. This force located at fire station No. 1 until 8:30 P. M. to cover the city. There were no other alarms, fortunately, during the period of the main fire.

The fire truck from the Hospital was stationed at No. 2 fire station, also for emergency service, while two Fort Custer trucks and one from Kellogg Field went into action at the fire. During the entire emergency, Battle Creek and Emmett Township volunteers stood fast, ready to give assistance if needed.

Under Fire Chief Crosier's direction, firemen fought the fire from the Michigan and Jackson street sides, and from the elevation of the Post building. At the height of the fire, four turret streams delivering from 700 to 1,250 gallons of water per minute, were in service. Two of these were set up in the street and were moved to different vantage points as necessitated by conditions, to fight the outbreaks in different stores. A third turret stream was operated from the deck of the aerial truck, and the fourth from the ladder, this being supplied by a 27-year old reserve pumper that was pressed into use. In all a dozen lines were in use, some from the back of the fire area in West Jackson street, others onto the roof and into basements and storerooms of the Stone Arcade.

According to fire department officials, it was a stubborn and tricky fire. Just when they appeared to have it under control at one point it would break out afresh at some other spot. With not too great a reserve of fire forces at hand, firemen were compelled to frequently shift their heavy-duty equipment around, including the turret streams.

The first lines were stretched to the interior of the Arcade and operated into the storerooms and basements but the flames, apparently sweeping rapidly through the basement areas under the stores beyond the reach of these streams, finally extended to the roof areas, driving out the firemen. As the westerly wind carried the fire toward the large Post building firemen concentrated on saving that structure.

With the flames from the Winslow roof theatening the east wall of the Post building, fire officials ordered the structure evacuated shortly after 5:00 P. M. Smoke and heat by then were permeating the floors.

Although smoke and water entered the building, the east fire wall proved an effective stop to the advancing flames. Wire-glass windows were cracked, but held against the radiated heat from the flames which licked up the sides of the structure.

As the fire progresseed, the audiences of both the nearby Post and Bijou thetres were requested to leave. They did so without confusion. Neither theatre, however, was damaged.

The only place of business in the Arcade that did not close was the Union Bus depot which continued to operate until late the night of the fire, despite failure of electric service in the building. Firemen fought the fire in the basement for over four hours, finally withdrawing when the water became chest-deep. Still the fire raged in the Kresge and Nancee stores and on the second floor of the building.

The fire burned furiously, and more than six hours after its discovery flames were still visible. As flames and flood cut off the power circuits, fire department's and utility company's flood lights were put to use.

Water Supply Adequate

Fortunately the water supply system served without failure during the entire course of the battle with the fire. An estimated 1,500,000 gallons of water were used on the blaze. During a nine hour period the Verona pumping station pumped water at the rate of 14,500,000 gallons per day. Department of public service officials credited the maintenance of the water pressure and supply to the 2,000,000 gallon reservoir completed at the Verona station only two years ago. This supply aided in taking the load from pumping equipment. At all times a pressure of 75 pounds was maintained in the water mains in the fire area and 94 pounds pressure was held at the pumping station.

Two persons were injured, one a fireman, T. O. McGee of Station No. 1,

Street Operations at Height of Battle Creek Fire

Neighboring firemen aid shorthanded Battle Creek department to subdue threatening blaze in old Arcade building.

who suffered a fractlured wrist when a hose connection broke; the other, Norman Douthwaite, Kresge store manager was slightly burned when he returned to the store to retrieve some belongings.

A squad of firemen, playing a stream over the Kresge roof when part of it collapsed, escaped injury. A dozen of more other firemen suffered either from smoke inhalation or fatigue.

Crowd Handicaps Firemen at Outset

A crowd that jammed the fire area in West Michigan handicapped fire fighters in their early stages of their fight, hampering the movements of equipment. City police, reinforced by sheriff's officers, had a difficult time controlling the spectators until reinforcements arrived under Sergt. Okla Knox of the local state police. The three police groups managed to confine the crowd behind the firelines.

Public Radio Broadcasts Description

Early in the fire, engineers of radio station WELL laid a special circuit from its studios to the fire and made three on-the-spot broadcasts for a reported total of forty minutes on the air. The first broadcast was at 6:00 P. M., for ten minutes; the second at 6:45 P. M. for fifteen minutes, and the third at 8:15 P. M. for another fifteen minutes. A resume was given at 9:30 P. M. from the studio.

According to the press, "Fire Chief Charles Crosier, Mayor B. E. Godde, members of the Kalamazoo Fire Department and . . . news reporters . . . were heard on the air."

Aftermath

As fire squads were still extinguishing residual flareups both Mayor Godde and Chief Crosier were being quoted as having hopes that the fire would have an influence in obtaining legislation and manpower that would help avert such emergencies. "We hope to enact a fire prevention ordinance very soon," Mayor Godde said, "Battle Creek needs an ordinance that will provide enforcement power so that the city can control hazardous fire conditions. There is an ordinance in effect now but it lacks enforcement powers . . . there are other properties in the city representing terrific fire hazards. We want a law that will compel people to take every precaution against fires."

Chief Crosier said that his department was seriously handicapped by a manpower shortage and that he will take immediate steps to bring his department to as near normal strength as possible.

MANY SEPTEMBER FIRES KEEP CALIFORNIA FIREMEN BUSY

San Francisco and Northern Part Of State Suffer Heavy Losses*

HOT, dry, weather gave fire-conscious San Francisco an uneasy period when scores of September blazes left many homeless, caused heavy damage and gave the fire service extra work.

In San Francisco, seventy-five fire alarms were received from midnight until nightfall, September 28, as the humidity dropped and heat increased, causing Chief Sullivan to keep in effect a rare emergency fire call—"10-3" retaining reserve firemen on duty. During the night another seldom used signal—"10-1" ordered fire companies to keep their motors warmed up. Later, Chief Sullivan issued the unusual "10-2" signal, an emergency assignment call for equipment. The effect of the "10-2" is to restrict the number of pieces of apparatus answering first alarms, holding the additional equipment in reserve for repeat calls.

September 28 and 29 brought the following critical fire situation to San Francisco and Northern California:

*Compiled from reports by FIRE ENGINEERING correspondent Earle Robinson and the press.

San Francisco

(1) Eighteen families burned out by a fast-spreading four-alarm fire shortly before noon, the 28th, at Twenty-third and Shotwell streets when seven flat buildings were virtually destroyed and eight others damaged. Eight firemen were injured.

(2) A three-alarm fire caused $40,000 damage at the Fire Brick Supply Company, 1401 Potrero street. Twenty-nine pieces of fire equipment were used in fighting this, and the simultaneous Shotwell street fire.

(3) The fourth floor of an apartment building at 585 Turk street burned, smoke overcoming a fireman and a tenant.

(4) An early morning fire totally destroyed the two-story building housing the Western California Products Company at Third and Evans streets, with an estimated $25,000 damage. The plant is a tallow works and the burning meat fats made the blaze spectacular.

San Francisco Bay Area Busy

(1) A brush fire back of Ft. Baker in Marion County went out of control late the night of the 27th, threatening a timber stand on Alpine Creek. Soldiers from the fort joined forest and volunteer fire-fighters in battling the blaze, which swept over 200 acres. The fire lighted the sky and was reflected in the water off Land's End creating the illusion that a section of San Francisco was afire, and causing numerous telephone inquiries.

(2) A brush fire at the base of Mount Tamalpais in Marin County destroyed several abandoned dwellings.

(3) Two other grass fires in Marin County outside Gnacio reuired 150 fire-fighters, soldiers and volunteers.

(4) The Hopkins Theatre, Thirty-fifth avenue and MacArthur boulevard, Oakland, was damaged by fire to the extent of $50,000.

(5) Two portable buildings at the Luther Burbank School, Sixty-fourth avenue and Outlook aveenue, Oakland, burned with a loss of $10,000.

(6) A home at 6301 Crown avenue, Oakland, was gutted and two adjoining houses damaged.

(7) Seven pieces of fire apparatus fought an eight-acre brush fire in Tilden Park, Berkeley, near Kensington avenue.

(*Continued on page* 876)

Bird's Eye View of Battle Creek Arcade Fire

Flames in Stone Arcade and adjoining Winslow Block break through roof of latter to threaten east side of Post building hidden by smoke. Fire stopped at theatre in foreground.

Full-Scale Pier Fire Tests Include Use of Water-Fog

Sponsors Find it More Difficult to Start a Fire Than to Extinguish it!

By ROI B. WOOLLEY

JUST how effective will water-fog prove in fighting fire out-of-doors, on piers and wharves?

That is a question that has beeen asked by many municipal fire chiefs, particularly those who have had experience in extinguishing such fires.

They have also posed the question, what sort of a job will water-fog do on open as well as enclosed type pier structures and how will fog compare with the use of straight streams, distributors and other portable under-pier fire-fighting appliances?

These are questions that have bothered members of the New York Fire Department, and others concerned with safeguarding that city's 500 and more miles of waterfront, with its hundreds of piers, from fire.

During the war fire protection forces, including the Coast Guard, and Port Security authorities, did an excellent job in holding fire losses in this type of hazard to the minimum. With the passing of Coast Guard and other emergency Port protection services from the picture—and with no appreciable letup in the Port's maritime activities, the fire department, still far from its normal strength, is faced with almost the sole responsibility of waterfront protection.

Although the New York Fire Department has not placed its "official blessing" on water-fog, or fog nozzles and related devices as has the Navy, Coast Guard and a number of the country's large and small municipal fire departments, many of its officials have displayed a lively interest in this development and some chief officers of the department are reported to have secured fog tips and nozzles on their own initiative, which they have been using with considerable success. Although Commissioner and Chief of Department Patrick Walsh says that the department "has been playing around with fog nozzles for many years" fog has thus far remained what its name implies to the vast majority of the officers and men of the world's greatest fire department.

The growing nationwide emphasis on water-fog as an effective fire extinguishing agent, and the fact that its development has been spear-headed by many former members and members-on-military-leave of the New York Fire Department, together with an acute awareness of the department's postwar protection responsibilities, undoubtedly contributed to bring about what are believed to be the first attempted large-scale pier fire-fighting tests thus far held in this country.

The experiments, which were conducted October 17 at an abandoned city-owned pier at the foot of 157th street, North River Drive, were cooperatively sponsored by the following groups: New York City Fire Department, New York City Department of Marine and Aviation, U. S. Coast Guard Port Security Branch and Mayor's Business Advisory Committee (New York City).

Pier of Open Type

The pier chosen, the only one available for experiments on the scale desired, could not be said to present the maximum difficulties to be found on piers such as are encountered in other sections of the Port and which have in the past given New York City and New Jersey fire services such strenuous work. However, in many respects it duplicates the construction to be found in scores of existing pier structures in the area.

The pier was built in 1910 and its overall measurements were: Length, north side, 201:48 ft.; south side, 218:55 ft.; width, 60:22 feet. It was located 207:45 ft. from similar structures, north and south of it.

Construction was of solid deck type, with deck laid on 12 x 12-inch timbers supported in turn by heavy oak piles. Of the original substructure, many cross-members had disappeared and others had rotted over the years. Some of the piles, likewise had practically disappeared.

For the test, the Department of Marine and Aviation installed extra wood sheathing on the pier deck to provide a complete deck surface. Kindling and waste combustibles were placed under the deck to further the burning. Neither piles nor any part of the substructure had previously been treated with creosote. This part of the North River being generally free of floating oil, the piles were coated at water-levels with only a slimy scum deposit which tended to retard rather than intensify the burning.

Also for purposes of the test, the pier was compartmented laterally into four compartments, or bays, by temporary light wooden bulkheads. In two of these bays, scuttles or ports were cut for the introduction of distributors and other below-deck fire fighting appliances.

Actual fire fighting operations were conducted by Coast Guard personnel under the direction of Lt. Commander Arthur Pfeister, USNR (retired NYFD chief), Lt. J. C. Healy and CPO Nich-

New York Fire Department Photo

A Lesson in How to Start a Pier Fire!

Coast Guard Chief sprays oil to speed substructure fire that progressed little in 53 minutes, while Lieutenant of Fireboat Harvey observes from punt. Note under-pier construction.

New York Fire Department Photo

Overall View of Pier at Start of First Test Fire

Efforts to start fire at low tide with Coast Guard fireboat, left, and George Washington Bridge in background. Slimy deposit on piles retarded burning.

olas J. Cappola. They had for their operations Coast Guard fireboats CG 64024 F and 57016 F, each having 2,000 GPM capacity, and Hanley boat 30120 F having 3,000 GPM capacity.

New York Firemen Stood Fast

In order to provide protection against possible extension of the test fires to exposures, the New York Fire Department deployed a full alarm assignment at the scene, including the fireboat Harvey, Engine Companies 67, 76 and 19 and Ladder Company 22.

Fortunately their services were not needed. Instead of the fire even attempting to get out-of-bounds it took the concerted efforts of all-hands *to make it burn!*

The New York fire services were represented by Commissioner and Chief Patrick Walsh; Asst. Chief Conway; Dep. Chiefs Heaney and Hurton, the latter acting in command of the Marine Division; Batt. Chief Rooney, 16th Batt.; Chief Jones of the Fire Department Shops; Capt. Irwin, Supervising Engineer; Chief Kidney, head of the Fire Prevention Bureau, and Captain Morris and Inspector McCabe of that organization; Inspectors Callahan, Maddox, and Walters; Dep. Chief Gunn, representing the Bureau of Standards and Appeals; and Charles Wilson, Administrative Officer of the Department, in charge of the operational details.

A large crowd of notables observed actions from the pilot boat "New Jersey" (Commander Adamson) which was located in the river, off the pier. Among the spectators better known to the fire service, were: Commander Harold Burke, Bureau of Ships, Navy Department, Washington; Commander Lloyd Layman, Coast Guard Fire Defense School, Baltimore; Commander H. K. Hughes, Bureau of Yards and Docks, Washington; Lieuts. Cox and Stahl, Navy Department; Lieuts. Bartlett and Riley, and Edward Zeltner, Coast Guard; Chief Paul Heinz, Dep. Chief Collins and Mr. Keenan, New Haven, Conn. Fire Department; Chief F. F. Wevil, Weehawken, N. J., Fire Department; Chief Ernest Beckert, West New York Fire Department; Messrs. Steffens, Wager and Hughes, New York Central Railroad; former New York City Chief and Commissioner John J. McElligott, now head of fire protection, Todd Shipbuilding Company; Lt. Col. Bingham, Fire Marshal, Capt. Grecset, Asst. Fire Marshal, Capt. Butterfield, Chief Kistenberger and others of the Port of Embarkation; Hugh McNair, Director of Fire Protection, General Aniline and Film Corporation; numerous representatives of manufacturers of fire-fighting equipment and Roi Woolley, Assistant Editor, FIRE ENGINEERING, recorder of the tests.

Mr. Joseph Boylan, Asst. Commissioner, Department of Marine and Aviation, represented that organization, in charge of pier and water side details, while Mr. C. R. Beardslee, Chairman, Mayor's Advisory Committee, was general chairman of the committee managing entire affair.

At the time of the first test, the temperature was 68 deg. F.; humidity about 60 per cent.; barometer, 30.10; wind, light NW and shifty; tide, dead low.

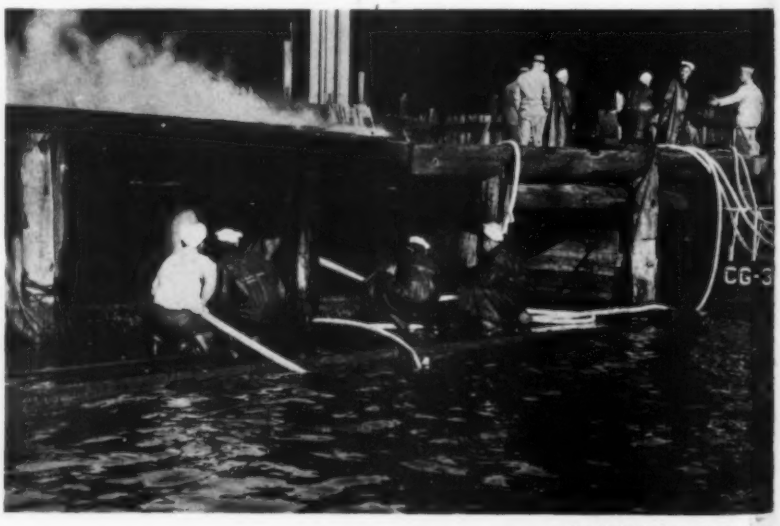
The first test was intended to demonstrate the effectiveness of fire department when distributors were applied through openings in the pier deck to control substructure and deck fire. No fog streams were to be used. This fire was set in the center bay of the pier, measuring approximately 60 by 40ft. Timbers and beams and part of the underside of deck were primed with light oil and some kerosene.

The torch was lit at 11:12 A.M. and applied to the sub-structure. Considerable difficulty was encountered in inducing satisfactory ignition. At 12:00 P.M. fire involved only about one-half the width of the pier in this section. Some smoke and a little fire was emitting through planking and sheathing. At 12:12 P.M. some fire was burning through part of deck covering, where temporary sheathing had been laid. Inspection from the water-level showed some flames rolling under the deck but very litle penetration of timbers and piles; little radiated heat below deck. At this time additional oil primer was applied.

In readiness to fight the fire were 2, 2½-in. lines stretched over the pier from Coast Guard fireboat, 57016F located at the river end of north side of pier. Each line was 100 ft. to which was attached a regulation fire department Bresnan distributor. These were lowered about 3½-ft. below pier deck. At 12:44 P.M. first line was charged. At 12:45 both distributors were operating. Pressures 100 PSI. These distributors had little immediate, appreciable effect on the fire.

At 12:49 P.M. a floating monitor was placed in service by the Coast Guard, the distributors being left in operation as before. The monitor on two lengths of 2½-in. line, operating at 100 PSI, was directed under the pier and its spray was effective, within its limited range. Due to the necessity of operating it at right angles from the fireboat some difficulty was experienced in handling its guide-lines.

At 12:51 P.M. the riverward distributor was shut down. The monitor was



New York Fire Department Photo

Test of Straight Streams of Pier Substructure Fire

From a raft Coastguardsman operate two 2½-inch lines supplied by Coast Guard fire boat. Note temporary wooden transverse bulkhead below deck at rear.

being used at this time to kill the fire in the edges and crown of pier. The fire at this stage was not severe; smoke not thick; being blown by a variable wind.

At 12:55 P.M. the monitor had practically extinguished fire along the north rim of the river. At 12:59 P.M., water was started in a 1½-in. line using a fog nozzle straight stream to wash the deck. A few shots of fog alternated but both stream and fog had little effect on fire below the deck surface. Pressure was 80 PSI. One distributor still operating.

At 1:00 P.M. monitor was discontinued and at 1:01 P.M. the 1½-in. line was shut down while an extra length was added, after which the straight stream was again directed over deck surface.

At 1:04 ineffectual efforts were made to extinguish remaining fire on rim of South side of pier with a straight stream. At 1:07 P.M. the second distributor was shut down, and at 1:15 P.M. men ceased overhauling to prepare for the second test fire, allowing the small residual fires to continue.

The only conclusions to be drawn from this test were that it failed to demonstrate anything except the effectiveness of the floating monitor, when and where this could be brought to bear on the fire.

New York Fire Department Photo

Board of Strategy Meets

Commissioner and Chief Patrick Walsh; Charles Wilson, Administrative Assistant; and Assistant Chief of Department in Command Edward Conway, confer with Lieutenant Commander Pfeister on how to propagate pier fires.

Second Test

The second test was conducted in the shoreward compartment or bay and intended to demonstrate the effectiveness of straight streams.

The fire was lighted at 2:08 P.M., after the substructure had been primed with 20 gal. of diesel oil and 5 gal. of kerosene. The weather was clear; humidity low; wind variable SW to NW and W, puffy and light.

Smoke at the outset was heavy, due to priming. At 2:20 P.M. some flame was observed through center of pier. By 2:30 the fire had extended well across the pier. At 3:42 P.M. the Hanley fireboat moved to the south side of the pier, stretched 6, 1½-in. hand lines, each 100 ft. fitted with navy type fog nozzles. Only the straight stream, however, was used in these tests.

At 3:10 P.M. the first line was charged, pressure 80 PSI. This was operated from a raft at water level, onto the pier substructure. At 3:03 P.M. the second line was started, directed on the underside of deck. At. 3:09 P.M. other lines were operated on the deck surface. At this time there was some fire emitting between deck beams and in sheathing.

At 3:22 P.M. all lines were shut-down and at 3:03 P.M. a turret pipe on the boat, with 1½-in. tip was used to wet down the deck surface. Pressure 80 PSI. This was discontinued at 3:08 P.M.

Fire still remained in bulkhead and crown girders after this test. No attempt was made to overhaul (no planking removed) to get at seat of the remaining fire. No fog streams used.

The only conclusions to be drawn from this test were what firemen have always observed, i.e., straight streams are ineffective in fighting this type of fire unless they can be made to reach the seat of fire. Water directed on the surface of the pier deck has little or no effect on a sub-structure fire.

The third and concluding test in which fog nozzles were to be operated was held in the outer section. Additional kindling was provided and about 35 gal. of diesel oil and 5 gal. of gasoline were used for primer. By this time the tide had risen and the wind freshened. Weather was still clear; barometer holding up; humidity down.

For this test two new type fog nozzles, one delivering 550 GPM, the other 500 GPM, were installed on two turret pipes of the little fireboat.

At 3:44 the section was lighted. The fire progressed more rapidly than the first two, heavy smoke being emitted. At 4:08 P.M. coastguardsmen on the Hanley fireboat were notified to be ready.

The Hanley type of boat is jet-propelled and steers from the rear cockpit and has a low freeboard. It was selected for the operation because the high tide would make it impossible for streams from any other type fireboat turret to reach the substructure of the pier.

At 4:40 P.M. the boat moved to the attack. Pump pressures were 110 PSI. Both upper and lower turrets were operated. The 550 GPM fog nozzle gave off more of an umbrella type fog pattern than the 500 GPM nozzle which, however, had the longer range.

Great difficulty was experienced in maneuvering the craft so as to bring both the turrets to bear on the fire. Back-pressure turned the boat off its course and it was impossible to hold its prow to the dock until a snubbing-line was made fast to the pier. The fog patterns and the pressures were varied by the boat operator.

Location of the turrets, one partially below the pier deck, the other about level with it, resulted in the loss of fully fifty per cent of the discharge pattern of the two turrets.

Where the fog particles hit the fire, there was an appreciable quenching effect. However, it was noticed that air currents, developed by the turret streams, projected beyond them and had the effect of fanning the fire. When one turret was shut down temporarily, the draft effect lessened appreciably and later, when both turrets were momentarily discontinued, flame which had been emitting through the deck structure, faded and only smoke appeared. When one of the turrets was replaced in operation, the blast of air was at once apparent, and the fire flamed anew above the pier deck, and out the opposite (north) side.

Although the patterns could not be measured, it was evident that effective reach of the best situated of the two fog nozzles was not more than half the width of the pier or about 30 ft.

At 4:46 P.M. the lower turret only (fitted with 500 GPM nozzle) was operating; pressure at about 100 PSI. The tip was only a few feet from the north side of the pier, but only about sixty per cent of its pattern was reaching below the pier stringers. It was believed at this stage that the same nozzle, on a 2½-in. hand-line, operated from a raft, would have materially reduced the fire in the substructure.

At 5:00 P.M. this turret shut down, and at 5:01 a straight stream was operated from a boat deck-gun on the surface of the pier deck which was still afire in several places. Fire was also brisk in the north pier side bulkhead and planking which had been beyond the range of the fog patterns. This straight stream had no appreciable effect and was shortly discontinued.

At 5:10 P.M. there remained some fire emitting through deck, and out from below the substructure on the north side. A hot fire persisted in the cribbing bordering the north edge of the pier.

At 5:20 the test was considered culminated, and the coastguardsmen were given the task of overhauling.

Few definite conclusions are to be drawn from these tests, the chief one being that further tests are advisable if

(*Continued on page* 886)

Intensive Training Stressed by Oslo Fire Department

Physical Fitness Held of Prime Importance to Firemen of Norway's Capital

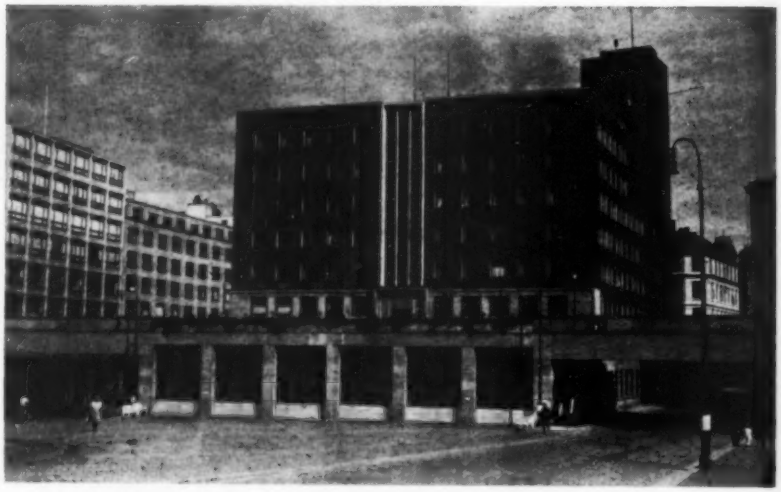
By EMMONS E. DOUGLASS

THE fire department of Oslo, Norway, is housed in six stations, each housing, in turn, a minimum of one hose wagon (engine company), and one ladder car (aerial truck). The central station houses one ladder car with a complement of six men; one hose wagon with a complement of seven men; one smoke wagon with four men; one accident wagon with a complement of three men; and cars for the Chief and the Inspector on duty.

The department is headed by the Brannsjef, or Chief, under whom are the Inspectors (deputies), Chief Foremen (captains), foremen (lieutenants), and firemen.

The tours of duty are 24 hours on and 24 hours off for all ranks. Each tour starts at 1.00 p.m. Twice each month each man receives a period of 72 hours off, and once each year there is a vacation of three weeks' duration. Men off-duty for 24 or 72 hours are subject to recall in the event of a large fire. Private-firemen receive the equivalent of $80 per month.

The central station is of modernistic architecture, eight stories high, and has, on the upper two floors, apartments for the Chief and the Inspectors. There is a well-equipped gymnasium, modern sanitary facilities, means for the showing of sound motion pictures in the gymnasium; and the bedrooms, which house two men each, are light, airy, and comfortable.



Headquarters Building of the Oslo Fire Department.

The yard of the station is surrounded on three sides by the station itself and provides ample space for drills and training, although there is no drill tower as we know it in the States.

Living quarters for the families of ranks below that of Inspector are not provided, inasmuch as those apartments which were originally intended for that purpose have been used during the occupation as offices for the city government while the Germans occupied the city hall. However, it is not expected that quarters will be provided for all ranks in the future.

Training is extensive and intensive, and the facilities provided are excellent.

The smoke chamber for the instruction of men in the use of the gas helmets is located on the third floor. It is divided into approximately 50 sections, each large enough to accommodate a man in a crawling position. The sections are arranged in three tiers, and the walls, floors, or ceilings of these sections may be removed or swung aside to provide passages throughout the chamber. It is necessary for a trainee to crawl through the passage provided, through dense smoke and carrying a dummy (approximately 190 lbs.) and wearing his self-contained mask. His progress through this labyrinth is marked on the outside by an electric tell-tale which shows the section he occupies at any particular time. It is not possible for the student to know what his route is when he goes through this, as the route may be changed between each test by the simple expedient of opening or shutting off some of the sections.

Great emphasis is placed on physical fitness by the Norwegian people and this is carried into the fire department. Each morning, except during the hot summer months, there is a compulsory period of calisthenics and gymnastics.

The Smoke Wagon of the Oslo Fire Department.

The display of medals, cups, and other trophies that have been won by members of the department in competition shows that this physical training has produced some fine physical specimens.

There is a separate room in the station set aside for the training of men in the use of the mask prior to actual testing in the smoke chamber. The room contains all equipment necessary to maintain, test, and repair these masks as well as materials for renewing canisters and refilling oxygen bottles and cleaning hoses and facepieces.

There is also a chemical laboratory for analytical work in connection with the investigation of arson as well as for lectures and demonstrations in the chemistry of fire.

Fire alarm telegraph is used in Norway nearly to the extent that it is in the United States. However, reliance is also placed on the use of the telephone in the transmision of fire alarms.

Modern Fire Alarm

The fire alarm telegraph equipment in the city is quite modern. It varies only in design from the type commonly found in the States. The basic principles are the same. Alarms for fire from street boxes are received at the central station over ten box circuits and transmitted to the outlying stations by use of a manual key. It is planned to install a mechanical transmitter as soon as one is obtainable.

Telephone alarms are recorded on a magnetic tape and may be played back at any time for the purpose of clarification of any message. In addition, at the time of receipt of a telephone alarm, an extra receiver is provided and a second operator listens to the conversation, thus providing a check on the regular operator in the receipt of any information.

Addresses of fires reported by phone, or box numbers, are marked on a small pad having provision for making multiple copies. As the officer of each company in the station reports to the floor in response to the house alarm, he is handed a slip from this pad bearing the address of the fire or the box number.

Response to telegraphic alarms is predetermined as it is in the States and is usually one hose wagon and one ladder car and the Inspector. Response to telephonic alarms is governed by the description of the fire provided by the person giving the alarm.

The Chief responds only if a fire attains large proportions.

Response of outlying companies is recorded at the central station on a tape showing the time of response.

Additional help is summoned to fires, when needed, by radio. All vehicles, with the exception of ladder trucks, are equipped with two-way radio, and each is thus in constant contact with the central station.

Ladder Truck Made by Magrius

The ladder trucks, all of which are aerials, are made by Magrius, and are similar to the aerial or "turntable" ladders in use by the London Fire Brigade. The ladders vary in extended length. The ladder at the central station is approximately 115′ long when extended.

The hose wagons are of the inclosed, or sedan, type, and all personnel ride inside in a compartment extending across the vehicle just to the rear of the cab. All hose wagons are of Swedish make. Hose and equipment is stowed in lockers along the sides of the truck. Approximately 300′ of hose is carried "made up" in a bin across the top rear of the vehicle. This is used in the street and is of the unlined variety, 2½″ in diameter. In addition there is carried, in individual lengths, single-jacketed rubber-lined hose for use inside of buildings to prevent water damage through leakage which is present when the unlined type of hose is used. All hose is in 90′ lengths. The lined hose is carried rolled, while the "made up" line is stowed in a manner that I have heard referred to as "flaked," or laid on its flat side and run back and forth across the wagon.

Hose wagons carry a hand ladder on the roof. It is approximately 35′ long and made of light metal. They also carry salvage covers.

The so-called smoke wagon is used for fire rescue work and its crew is especially trained for this. The wagon carries all the necessary appliances for resuscitation and first aid. This wagon is not used for accidents outside of those taking place at fires, with the possible exception of such accidents as might cause asphyxiation.

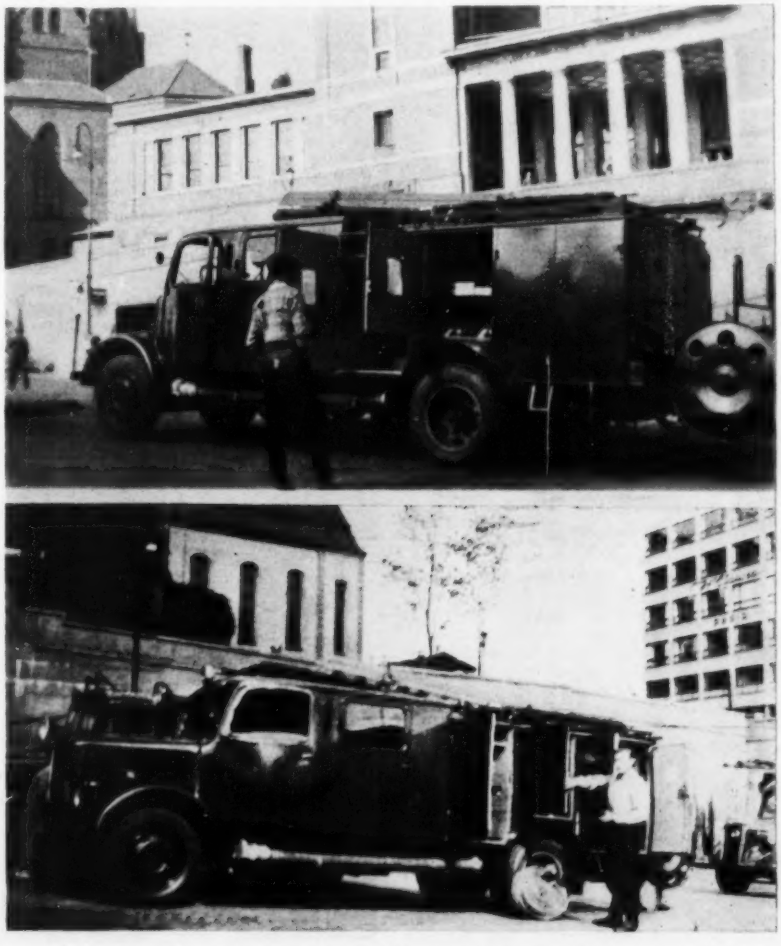
An additional use of the smoke wagon is that of command post at a large fire. For this function, it is equipped with a telephone which may be connected into any nearby telephone line in the same manner as a lineman's phone, and thus create an auxiliary channel of communication with the central station in the even of radio failure. It is also equipped with a loudspeaker and amplifier for use in directing fire operations.

Accident Wagon

The accident wagon is equipped to handle all types of accidents with the exception of those requiring resuscitation or first-aid. That is, it is to handle derailed street cars, smashed elevator and those other accidents with which our rescue squads are so often faced. To accomplish this mission, the truck is equipped with a large crane that is concealed inside the sedan-like body, hydraulic jacks, rope, cutting torches and all the other allied tools that go with such work.

Both the accident wagon and the smoke wagon are built by the same Swedish firm that built the hose wagons.

There is quite an extensive waterfront to Oslo and, for protection, there is a fire boat which is manned only when there is actual need for it. The personnel of the department are, to a great extent, former members of Norway's vast Merchant Marine and thus the



Sedan Type Pumper in the Oslo Fire Department, showing Compartments for Carrying Equipment. Note Hose Reel Mounted at Rear.

Fire Alarm Box in Oslo.

manning of the fireboat presents no problem, in that men, picked almost at random, are able to handle the boat with considerable skill.

One side-light that may be of interest is the sound warning with which the trucks of the OFD are equipped. It consists of a horn sounding two notes, approximately four tones apart, alternately. This is very distinctive. The sound is very loud and carries about three blocks over the sound of rather heavy traffic. The vehicles are equipped with blue lights for warning lights rather than the red lights which are conventional at home.

Fire Problems Similar to U. S.

The construction of the city of Oslo is much the same as that of any city in the United States. Due to the fact that there is a good deal more wooden construction here than is found in Great Britain, for instance, I believe that the fire hazards and fire fighting conditions more closely approximate our own than other European countries, where stone is the usual building medium.

This department was fortunate, during the occupation, in that it suffered little or no interference from the Germans. At one time firemen were "encouraged" to exert themselves a little more by a rather impressive display of arms, but this was quickly remedied when the German fire officer ordered the "encouragers" removed.

The Germans had a fire unit in the city. One of their pieces of equipment which is now in the hands of the OFD was a trailer made of wall-board on a steel chassis and containing equipment that looked to be of very inferior material and workmanship. Another of their pieces of equipment was a sedan type truck, the body of which was made of plywood and considerably warped. The wooden body has been removed and replaced by a metal one and as soon as the paint is dry, it will take the place of an out-dated truck now in use at the central station. An interesting fact about this truck was brought out by one of the shop workmen who showed me brackets removed from the original body. These brackets had been used to hold firearms. Apparently, fire fighting was not the only interest the Germans had.

FOUR ALARM RUBBER FIRE GIVES FIREMEN SMOKY JOB

Pittsburgh, Pa., Tire Retread Blaze Produces Pungent Smoke, Nine Firemen Casualties; $50,000 Loss

A Staff Report

A FOUR-ALARM fire, sweeping through two tire retread companies sent clouds of black smoke and flame high into the air and showered burning bits of rubber over The Point area of Pittsburgh on October 18.

The fire, started by unknown causes at 11:00 A. M. in the three-story brick building occupied by the Retread Downtown Tire Service, next to a service station at the corner of Liberty Ave. and Water St., spread, behind the cloak of heavy smoke, to a two-story section of the same building in the rear, fronting on Liberty Ave., and occupied by the Anchor Tire and Battery Company.

The layout of the buildings, their age —over seventy-five years—their contents and the heavy volume of smoke, gases and heat, gave firemen summoned on the four-alarms by Chief William J. Davis, a tough battle. Although by noon they had the blaze under control, it required a dozen streams of water directed on the remaining fire, and on adjacent exposures for some time after, before all danger of extension was past.

At the fire's peak there were twenty-one pieces of fire-fighting apparatus, including fifteen pumpers, in action. Pumpers drew water directly from the Monongahela River, and the City's fireboat was moored close enough to the fire to permit crewmen to shoot streams of water over the burning and adjacent buildings.

Explosions Hamper Operations

Adding to the difficulty in fighting the fire was a series of minor explosions as the flames reached supplies of a powder used in vulcanizing. Firemen said the powder—which they did not name—was worse than gasoline (apparently referring to its flammability).

According to press reports the burning rubber was so pungent that gas masks were not sufficient protection to permit firemen to enter some sections of the fire area. It is said that altogether there were more than 4,000 tires and 8,000 tubes stored in the buildings, in addition to the highly flammable materials used in volcanizing and other tire repair.

Firemen were able to save adjacent buildings from major damage. The structure housing the Retread and Anchor companies is reported a total loss, however, with damage estimated by Chief Davis at $50,000.

At the fire's height, about 11:30 P. M., several firemen had a narrow escape as the front wall of the Retread Company caved in, knocking over one ladder. At the same time the roof sagged dangerously. It later collapsed carrying two floors with it.

Nine firemen were treated for injuries and smoke inhalation. They were Capt. Frank Hagan, Co. No. 19, overcome by smoke; Capt. Geo. Rose, Co. 33, second degree burns on hand; Fred Belkofer, chief's aide, burns of both hands; Hoseman Matt McDonough, Co. 19, minor injuries; Capt. Fred J. Weis, Co. No. 1, contusion of chest; Capt. Ollie Letzkus, Co. No. 1, knee and foot injuries; Hoseman John Teague, Co. No. 1, knee injury; Hoseman George Rosenthal, Co. No. 45, bruised back; and Hoseman Leonard Schaffer, Co. No. 1, knee injury. A woman, Mrs. Gussie Seidman,

As the Pittsburgh Fire Department Went into Operation on the Tire Retreading Plant Fire.

wife of one of the proprietors of the Anchor Tire Company, was injured when she tripped over a hose.

Traffic and Telephone Congestion

The heavy pall of smoke, and commotion caused by responding fire companies, resulted in a rush to the scene by thousands of spectators, and a peak of telephone inquiries to the fire department and newspaper offices. Traffic over The Point bridges, nearby and on Liberty and Penn Avenues was hopelessly snarled as firemen struggled to prevent the spread of the fire. The fire occurred at a time when thousands of persons who had visited, or were on their way to visit, a U. S. Navy LST which was docked nearby. They added their confusion to that caused by the other onlookers, creating added difficulties for firemen and police, extra squads of the latter being required to help clear the area.

Fatal Fraternity House Fire

Started by sparks from an open fireplace, fire destroyed the Sigma Alpha Mu fraternity house on the Rutger's University campus in New Brunswick, N. J., at 3:30 A.M. October 21st, killing two fraternity brothers and a 19-year-old guest, and injuring six others.

Of the injured, four were fraternity members, one was a young woman and one an aged houseman. All guests suffered burns and other injuries as they jumped from second-floor bedrooms of the blazing three-story frame building.

The bodies of the dead, all suffocated and partly burned were removed from the structure by firemen at 7:00 A.M. It is reported one student was asleep on the third floor and the others in bedrooms on the second floor.

Fire Chief Arthur Jacques, of the New Brunswick Fire Department, said the blaze apparently started from fire that had been left in the living-room fireplace on the first floor.

Several investigations were reported under way to gather further facts concerning the fatal blaze. University officials estimated the damage to the structure at $20,000. It had been used as a fraternity house, overlooking the Raritan River, for almost thirty years.

Wisconsin-Illinois Fire School

The Ninth Annual Fire School of the Southern Wisconsin-Northern Illinois Firemen's Association was held in Galena, Ill., Sunday, September 16, 1945, under the direction of the Galena Fire Department.

There were 600 firemen reported registered from seventy-six fire departments in the tri-state area. There are forty-four departments in the association.

The school opened with registration at 10:30 A.M. Sunday. In the afternoon there was an address of welcome by Mayor I. L. Gember of Galena, with response by President J. T. Alexander of the association.

Events of the afternoon consisted of out-of-door demonstrations and evolutions of fire-fighting equipment by manufacturers' representatives.

Dinner was held in the Community Building and at 7:30 P.M. John H. Craig, Illinois State Fire Marshal, delivered an address on "Fire Prevention Week in Illinois in '45."

Following this, there was a Round Table discussion led by Chief Roy W. Alsip, Secretary of the Illinois Firemen's Association, assisted by R. G. Kessler, Supt. of Fire Prevention, State of Wisconsin Industrial Commission; Richard E. Widman, former Chief of the Madison, Wis., Fire Department; Chief Elmer H. Fairbert, Beloit, Wis.; Chief Connel L. Nicol, Sterling, Ill., and Chief Al Luedeke, Freeport, Ill.

"If I were a fireman" was the subject of an address by Professor L. H. Provine, Director Illinois Fire College, University of Illinois, after which Edw. "Dusty" Rhodes conducted a demonstration of sirens, warning signals and lighting equipment. A Dutch Lunch and Entertainment closed the program.

Hallowe'en Fires and False Alarms

This year's Hallowe'en bred the usual number of fires—some of them fatal—and false alarms, all of them a nuisance to the fire service.

From only meager reports received as we go to press, the record for false alarms for any one area would appear to go to the Borough of Queens, New York City, where between the hours of 6:00 P.M. and 8:30 P.M. fifty-three false calls were received. Police ascribe this to "one of the wildest Hallowe'ens Queens County has ever experienced."

In addition, there were four other alarms for actual fires, all of them caused by lighted pumpkins or candles setting window curtains on fire. Damage was trifling.

In Yonkers, N. Y., four-year-old Sue Roth was turned into a blazing torch as her Hallowe'en costume was ignited by a jack o'lantern. She died in a hospital. Playmates said the dress caught fire as she playfully thrust pieces of paper into a lighted pumpkin.

Police-Firemen Win Overtime Pay

Eighty-two members of the police and fire department of the Elwood Ordnance Plant, Elwood, Ill., in September, were awarded $189,452 in overtime payments and damages under the fair labor standards act.

The employes had filed suit against Sanderson and Porter, who operate the plant for the Government, claiming payment in excess of 40 hours a week from July 14, 1941, to June 2, 1945.

Thousands of Automobile Tires and Tubes Were Casualties when Fire Gutted This Retreading Establishment at Pittsburgh, Pa.

Water Fog Impressive in Class "A" Fire Tests

Cooperatively Conducted Dwelling Fire Tests Provide New Evidence on Use of Water Fog

A STAFF REPORT

WHAT are considered the first large-scale comprehensive field tests the use of water-fog in fighting Class A dwelling fires were held at Hamden, Conn., October 11, under the sponsorship of the Hamden Fire Department, Chief R. C. Spencer; New Haven Fire Department, Chief Paul P. Heinz, and the Rockwood Sprinkler Company. A crowd of several hundred visiting chiefs, municipal officials and others observed the experiments.

Houseful of Fire Meets Fog Cloud
Forty seconds application of water fog almost extinguishes consuming fire that burned through roof.

For the tests, a condemned two-and-a-half story frame dwelling on the outskirts of Hamden was secured. Although beyond the city's water supply system, ample water was provided by a nearby stream from which pumpers of the Hamden department delivered water for the tests, and to protect exposures Ladder Co. No. 3 of the New Haven Fire Department was also used.

All-told there were five tests conducted during the progressive burning of the frame clapboard structure,* as follows:

TEST No. 1: Object: to extinguish a cellar fire by advancing line through heat and smoke down basement stairs behind water fog nozzle.

For this test a large quantity of waste wood was piled in the front part of the cellar. Stairway was not obstructed. 5 gals. of solvents; 1-gal. of motor oil; 1 of kerosene and 3 of gasoline were used as primer. Fire was ignited by torch tossed through basement windows after gasoline had been applied.

After about 2-min. pre-burn, a 1½-in. line with 1-in. fog nozzle was advanced down stairway by two men. The water-fog discharge proved insufficient and 30-sec. later shift was made to a 1½-in. water fog nozzle, extinguishing the major part of fire in 2-min. and complete extinguishment 1 min. later. The 1-in. fog-nozzle followed the 1½-in. downstairs and assisted in final overhaul.

One-inch nozzle used 3 min. at 50 PSI

*With the exception of the improvised cellar-pipe (built by the New Haven Fire Department) all nozzles used were Rockwood type.

Test No. 1. Fog Nozzle Operated in Attack Down Cellar Stairs Drives Out Smoke, Heat and Gas Through Rear Basement Areaway

delivering 12 GPM, total, 36 gal.; 1½-in. nozzle used 2 min. 30 sec., at 100 PSI, delivery 55 GPM, for total of 138 gals. Total water used 174 gals., approximately.

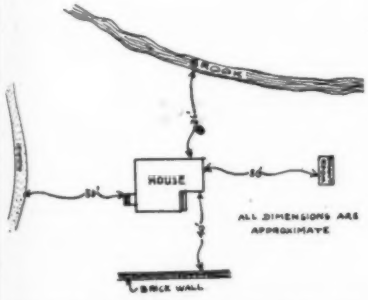
Firemen on line reported that the 1½-in. nozzle was entirely adequate, and that they felt no heat when advancing down cellar stairway.

Examination showed the stairway heavily charred, joists in cellar lightly charred and ¼-in. depth of char noticed in various places. Some small pieces of waste wood had been completely consumed. There was little or no loose water on floor.

Test indicated conclusively the advantage of water fog in attacking a hot basement fire by way of cellar stairway—usually a punishing operation for firemen.

TEST No. 2: To extinguish large cellar fire by means of cellar-pipe applied through hole in first floor.

Another large quantity of flammable material was piled in center of cellar under the floor opening and primed with 5 gal. each of gasoline and solvents. After 2-min. pre-burn firemen operated cellar pipe (constructed of four old OCD type "fog" nozzles brazed on a 2½-in. metal pipe) supplied by 200-ft. 2½-in. line. Discharge was approx. 440 gpm in the 45-sec. the pipe was operated. Pump pressure was 200 psi. Total discharge approx. 330 gals. Final glowing embers extinguished with 1½-in. line.



Test Dwelling Showing Nearness of Hazard and Water Supply

Test No. 2: Before Ignition, Showing Improvised Cellar Pipe Above Kindling; Charred Beams and Stairway from First Fire

TEST No. 3: Object to extinguish large fire within a house by means of water-fog (including fire on two floors, behind partitions and walls, and in blind attic).

Considerable combustible material was piled into center of room on first floor; plaster and lath was removed above pipe to allow fire to travel between studding to second floor. Excelsior was placed in second-floor room and in attic, which opened into rear second floor room through a 14-in. x 30-in. trap-door. This was left open. Attic was also vented by front and rear windows and by hole in ceiling of second-floor front room; no stops in partitions. An area about 6-sq. ft. was opened in rear partition of first floor center room and the ceiling was also opened to further the fire, which was started on the first floor after priming with 5-gals. each of gasoline and solvents.

Thirty seconds after ignition all of the first and part of second floors were involved; flames were sweeping out of windows of both floors and outside clapboards were burning.

Fire was fought with two 1½-in. and one 1-in. water fog nozzles. Pressures at nozzles approx. 100 psi. One line advanced through front door, straight through downstairs; one up stairway to second floor; third line (1-in. nozzle) backed up one on the gound floor.

Water fog first applied to fire 1 min. 16 sec. after start. In 17 sec., fire in the first floor was practically out. Fire was extinguished in second floor and attic 1 min. and 4 sec. after start of operations. The three inside lines were then used to extinguish glowing embers and all water was shut off 3 min., 14 sec. after start of attack.

It was noted that when water fog was applied to main fire (first floor)

Hot Test Fire Knocked Down in Matter of Seconds with Water Fog

Pictures show (left) Chief Heinz explaining preparation for Test Fire No. 3 to FIRE ENGINEERING's Roi Woolley; (right) Chief Spencer and assistant checking effectiveness of water fog on hot fire. Note penetration of fire and burned kindling.

Four Hundred Sixteen Gallons of Water Extinguish Extensive Hot Dwelling Fire

Progressive states of one of Hamden, Conn., test fires. Top: Ignition; firemen waiting to attack. Center: Advancing fog lines to first and second floors; 1-inch line in reserve. Bottom: Fire practically out; no water directed on siding.

there was an almost instantaneous quenching effect, and the fire on outside of house, fed by flames lapping out of first floor windows, immediately died down, leaving a charred surface.

It was also observed that a hot fire in an alcove on the main floor was apparently extinguished by the indirect application of the water fog pattern passing through an adjoining room—not by any *direct* application in the alcove itself. This was evidently due to convection currents, which apparently pulled the fire out of the small room and from the window out of which it was "emitting." The room was later completely cooled with a quick dash of water fog.

The men operating the lines experienced no difficulty in advancing. The discharge rate of water fog at 100 psi was 126 gpm. *Total discharge of water for all operations inside of house was 416 gals.*

Here is the time schedule for this test:

	TIME Min.	Sec.
Fire ignited	0	0
Fire on 2nd floor started from 1st	0	30
Water fog applied	1	16
Fire practically out on 1st floor	1	25
Fire practically out on 2nd floor	3	0
Lines shut off	4	30

TEST No. 4: To extinguish fire by means of large water fog nozzle mounted on aerial ladder.

For this test the attic (described in Test No. 3) was loaded with combustible material; rear window was boarded to restrict draft, and fire in attic space was lighted. Here is the chronological sequence:

	Min.	Sec.
Fire started	0	0
1 Board rear window removed	2	[illegible]
Second board removed	3	45
Water fog applied	4	35
Fire out	4	37

This fire burned sluggishly, due to lack of ventilation in attic. As window blocking was removed, the fire increased in intensity. While fire was progressing, water fog nozzle was discharging harmlessly in the direction away from the fire itself. At given signal, the aerial ladder, partly extended, was swung so that the fog nozzle passed across front attic window, horizontally. It was allowed to remain, discharging into the window (most of the pattern was effective in penetration) for 2 sec. and then removed by rotating the ladder turntable and depressing the fog stream by means of guide-lines.

When the water fog was applied to window, a large quantity of smoke and steam emitted from rear attic window. The 2½-in. nozzle used for this test discharged about 200 gpm at 100 psi. Approx. 7 gals. of water were used to knock out this fire.

TEST No. 5: To apply a large volume of water fog to a fire completely involving a house in effort to fully control fire (an agreement had previously been made that house was to be completely burned at finish of test. Because of this there was no intention of completely extinguishing all fire since it would be difficult to rekindle and reburn it).

For this test a relatively large quantity of waste combustible material was placed throughout the house and primed with oil and gasoline on the first floor. Due to wet conditions the fire was slow in gaining headway. Clapboards and

(*Continued on page* 897)

HISTORIC FALLS HOTEL BURNS; REPORTED $700,000 LOSS

Effective Work by Fire Department Confines Fire to One Wing of Structure

A Staff Report

A MAJOR portion of the 120-year old Cataract House, historic Niagara Falls, N. Y., hotel, was destroyed in a spectacular fire on October 14, with an estimated loss of $700,000.

The fire, which apparently originated in the cupola, which would correspond to the sixth floor, soon spread in all directions fed by a strong wind, destroying the entire north wing, including the gaily decorated ballroom and taproom together with many valuable paintings.

The first alarm was flashed to Niagara Falls Fire Headquarters at 10:15 A.M. by Patrolmen Edward F. Fiutko and George Fink who were investigating a reported burglary at the rationing board nearby. The two officers then entered the hotel and, with the day clerk, ran from floor to floor to spread the alarm. Approximately 200 guests fled down fire escapes and inner stairways.

As soon as the threatening character of the blaze was determined by Chief James H. O'Neil, he sounded a general alarm, calling out all firemen and apparatus in the city.

Two fleeing guests were hurt, two others partially overcome by smoke and five firemen narrowly escaped being buried under burning timbers when the ballroom ceiling fell. They were Capt. E. C. Riley and Firemen Edward J. Cassidy, Albert A. Brinklow, George Ladue and Joseph D. Birmingham.

According to police estimates, more than 100,000 persons viewed the spectacle, thousands of them lining Buffalo, Bridge, Main and Riverway streets. Pillars of smoke were visible from the South Grand Island Bridge, about ten miles away. All available police were placed in service to control the crowds.

Three companies of auxiliary firemen, called out by Civilian Coordinator George Rayner, Jr., assisted the regular firemen.

According to William A. Wafer, the manager, the five-story wooden structure had 300 rooms. The upper floors were not occupied by guests. "We had two minor fires last August, but nothing to compare with this," he declared. "The orderly manner in which the guests left the building was commendable. No one lost his head and there was no hysteria."

Ronald G. Wright an officer of the Eagle Tavery Hotel Corp., which owns the Cataract House, is authority for the estimated damage figures. "The amount ($700,000) is based on a replacement figure of $600,000 for the building and $100,000 for contents," he explained. Losses of guests were not immediately figured but hotel workers said might be as high as $15,000.

Although fire fighters were at the scene over four hours, Chief O'Neil said the blaze was under control less than two hours after the first alarm.

Historians list 1825 as the construction date of the burned portion of the old hotel which once extended over Riverway street to the Niagara River. The hotel was a popular visiting place for Southern planters before the Civil War. It is said the series of registers kept at the hotel included the names of Millard Fillmore, Abraham Lincoln, U. S. Grant, Grover Cleveland, Franklin D. Roosevelt and many others.

Height of Battle to Save Historic Cataract House

A "Niagara" of water was unable to prevent raging fire from destroying South wing of hotel, floor by floor.

120-Year Old Niagara Falls Hotel Partially Gutted

Firemen use heavy streams in effort to control fire that did reported $700,000 damage to famous Cataract House, October 14.

The Cover Photo

A five-alarm fire destroyed the warehouse of the Philadelphia Mill Waste Salvage Company in Philadelphia, Pa., on October 9, doing damage estimated at more than $50,000. The cover photo shows the front wall of the warehouse as it collapsed.

LARGE TROOP TRANSPORT VESSEL PROTECTED AGAINST FIRE THREAT

S. S. Europa, German Luxury Liner Converted to Ship for Moving Troops

By Jerry Daly

WITHDRAWAL of British ships from American troop transport service caused a sudden shift in plans for converting America's biggest war prize, the A-177, now USS Europa, former North German Lloyd liner, into a U. S. Navy transport. Instead of 10,000-troop capacity as originally planned, the erstwhile Nazi luxury ship (she cost $17,000,000) was rushed through conversion to only 7,000-troop capacity. She was scheduled to go to the other side for her first cargo of soldiers on Nov. 9.

Lt. Carl F. Dreesen, U.S.N.R., Fire Marshal U.S.S. Europa

The Europa was converted at Bayonne, N. J., beginning Sept. 25, and was scheduled for 45 days of refitting. This was interrupted when U. S. Government officials decided that it would take too much time, and would cost $3,000,000 to finish the job.

Lt. Carl F. Dreesen, USNR, Battalion Chief, FDNY, retired, is the Fire Marshal of the 936-foot vessel which has a gross tonnage of 49,730. He was flown to Bremerhaven, Germany, last summer with a crew of Navy fire fighters to prepare the ship from a fire-protection standpoint for the trip westward. There had been a couple of fires in the ship at Bremerhaven. Lt. Dreesen held six drills daily at sea by six repair parties aboard. These specialists consisted of fire fighters in the Navy, originally from several of the larger Fire Departments of this country.

The USS Europa has 29,200 feet of new hose on 292 outlets; 435—15-lb CO_2 extinguishers; 135—50-lb CO_2 cylinders in a bank for cargo holds, four fire rooms and two engine rooms; 48 alarm boxes; seven pumps capable of 6,050 GPM and 33 applicators for one and a half inch all-purpose three-position fog nozzles. The ship carries 6,100 tons of fuel oil; 280 tons of Diesel oil; 175 tons of lubricating oil; 4,300 tons of fresh water and 1,200 tons of reserve water.

On the trip from England last September, the most extreme precautions were taken. With the fate of the SS Normandie in mind, the Navy official statement said: "Since the Navy took over the Europa, a vigilant fire watch has been maintained. During welding operations and other repair activities, a dozen fires were spotted by the Fire Watch, and all were extinguished without damage. But for the Fire Watch the blazes might have gained headway, as happened on other ships."

While in port last month, Comdr. Harold J. Burke, USNR, of the Navy's Fire Damage Control Section, Bureau of Ships, made a survey of the Europa with Lt. Dreesen and Lt. W. C. Freitag, USNR. They joined in recommending additional fire protection, to wit: two Diesel pumps each of 1,000 GPM; an eight-inch fire main and deck wash system on the main promenade starboard side; salt-water sprinkler system for stairwells and vestibules; transverse water curtains with 260 L-11 Navy heads in eight separate areas to subdivide all decks excepting where there is machinery; 154 exhaust and ventilator fans topside; a new CO_2 system of three cylinders each in four galleys and paint rooms; a stationary CO_2 system with 135—50-lb cylinders to protect fire rooms and holds.

Lt. Dreesen was in the New York Fire Department 24 years. He retired last year to go into the Navy. His last assignment was the 10th Batt. in the Yorkville section of Manhattan. He has an excellent record in the department for efficiency and deportment.

Blast Injures Many in Morristown

Morristown, N. J., was visited by a serious fire in the business district on September 2, which caused loss estimated at $500,000 to a four-story brick business building and other property.

Shortly after the fire department arrived on the scene a blast, believed due to back-draft, occurred on the second floor of the building. Two large plate glass windows, including the window sash, blew to the opposite side of the street, showering many of the crowd of spectators with glass and debris. More than fifty persons required first aid. Peculiarly enough, in this instance injuries were entirely confined to civilians. Firemen, working close to the building escaped injury, as the flying debris went over their heads. The force of the explosion was so great that one of the lights on the fire department's searchlight apparatus was torn from its anchorage.

The fire, of undetermined origin, for which three alarms were sounded, appears to have started in the rear of a store occupied by the National Shoe Co. From there it spread to a Schulte United Store on the left. To the right the fire progressed through four smaller stores before being checked at a fifth. Above these stores was a dance hall, a packing plant of the Weston Biscuit Co., dentists' offices, a rooming place and three private apartments. Some twenty-eight persons living on the upper floors escaped injury but were left homeless.

Firemen, assisted by help from neighboring communities, labored fifteen hours before the fire was extinguished. Chief Green of Morris Township, an adjoining community, dispatched four of his five fire companies to Morristown shortly after the second alarm was sounded. All of them operated on the fire throughout most of the night. Morris Plains also dispatched an engine company which was assigned to cover-up.

The Morristown Fire Department is volunteer with the exception of ten paid men and Chief of Department, John J. Cullinan, who was in charge of the fire. The entire department, consisting of three pumpers, an aerial truck, hose truck with deck-pipe, fire patrol unit and a searchlight truck, and ambulance respond on box alarms. The ambulance is a unit of the auxiliary firemen but, since the termination of OCD, the auxiliaries have continued their services to the community as an independent organization. At this fire they worked with the Morristown Chapter of the Red Cross whose unit disaster chief is William Lynch. The training in first-aid stood these auxiliaries in good stead in caring for and transporting the blast victims to the hospitals.

Although the building was completely gutted by the fire, the department fire forces under Chief Cullinan's guidance were able to check it from spreading through the entire Speedwell Avenue block, which is all of the same type construction, dating back to 1890.

THEODORE VRANA

Firemen Refuse to Fight Fire

Firemen of the city of Vernon, Calif., adjoining Los Angeles, are reported to have stood watchfully by as flames raged through several business establishments in an industrial district, on October 24.

Fire Chief Frank Donnelly of Vernon explained that the unincorporated area in which the fire occurred is without fire protection facilities, and no provision was made for outside aid in the event of fire.

A one-story brick structure housing five firms was destroyed and about forty second-hand automobiles were burned. Damage was estimated at $300,000.

It is said that firemen (of Vernon) kept the blaze from spreading into neighboring communities.

WARNS AGAINST DANGEROUS GAS PRODUCED BY HEATED PLASTIC

New Hampshire Chiefs Meeting Hears Discussion on Hazards of New Plastic

APPROXIMATELY 250 fire officials from all parts of New England put in a busy October 4th in attendance at the one-day conference held by the New Hampshire Fire Chiefs' Club and the Nashua, N. H., Fire Department.

Highlighting a program that kept the visitors busy was a demonstration by a group of New Hampshire scientists of the toxic effects of a certain plastic base substance when heated.

According to Dr. D. S. Eppelsheimer, director of the Engineering Experiment station at New Hampshire University, a substance used in some plastics now being sold to housewives in their kitchen utensils, and which may ultimately be encountered in innumerable household and other items when heated, is so deadly it could wipe out a whole family without warning.

The discovery was made, it is said, by University of New Hampshire scientists while they were experimenting in plastics to further develop industry in the state.

According to Dr. Eppelsheimer, the plastic resin which is made from melamine is one of the most versatile of the plastics, and it may be encountered in thousands of different items. He pointed out that there was no way a housewife could determine the substance was in an article unless it was so marked. To add to the dilemma, it is used by a number of manufacturers who themselves probably are unaware that it is so deadly.

The scientists under Dr. Eppelsheimer revealed—and demonstrated before the visitors—that the plastic substance when heated causes generation of deadly cyanide gas, perhaps the most lethal of all poison gases.

It was pointed out that unless national regulatory legislation is effected, every home will eventually have an average of perhaps five pounds of the substance, making fire-fighting a death-risking job at every house fire. Further, it was said there is already enough of the substance in some stores—perhaps in basements where a lot of plastics are stored—to make it dangerous for firemen to enter the buildings.

Dramatic Demonstration

A dramatic demonstration of the deadly gas was made on the auditorium stage when a small piece of plastic was baked and then stored in a bottle. From the bottle the gas was injected into glass chamber where it killed a rat in less than thirty seconds.

The scientist estimated that it was one volume of cyanide to a million volumes of air that killed the animal so quickly and they pointed out that a kitchen could become a death chamber equally as quick.

Prof. J. Seiberlich, one of the discoverers, said the gas was particularly dangerous because there was no odor nor noticeable taste and no color to it.

One of the simplest tests, he pointed out, is that a cigar smoker will notice that the smoke is terribly bitter if there is any cyanide in the air. He said that melamine is about thirty-three per cent cyanide gas when it is heated to 800 to 1,000 degrees but at temperatures just hot enough to char the substance there is enough lethal gas escaping to kill several people.

Dr. C. F. Jackson, director of the biological institute, who proved the toxicity of the plastic gas, explained in detail to the group the results of cyanide gas poisoning on the human body.

Dr. Eppelsheimer, in explaining melamine, said that it was the name of a molecule. The heat, he stated, broke up the molecule to form new molecules, a third of which are HCN—cyanide. He stressed the point that melamine is not a trade name and that not all plastics contain it. Some of the places in which it is used and will be used in the future, if not banned, will be on ice boxes, on paper towels, on shirt collars, cigarette holders, table tops and in kitchen ware and utensils.

It was revealed by the speakers that the New Hampshire delegation in Washington had been informed of the developments and something is expected in the way of national regulatory legislation.

Morning Given to Demonstrations

The morning program opened with demonstrations of fog nozzles and applicators used in fighting oil fires, under the direction of Chief Paul Heinz and Deputy Chief Collins of the New Haven, Conn., Fire Department, assisted by members of the Nashua Fire Department, Chief Anthony J. Molloy, and representatives of the Rockwood Sprinkler Corporation.

Following the operations with fog nozzles there was an exhibition of the new electronic portable megaphone by representatives of Guided Radio Corporation.

After a dinner at the Country Club, where the greeting of the state were extended to the group by Governor Charles M. Dale and Mayor Eugene H. Lemay and Fire Commisioner Chairman Simon St. Laurent, the afternoon session got under way at the Nashua High School Auditorium.

Fire Marshal Edward H. Whittemore of Massachusetts spoke on the subject "Cooperation of the Fire Chief and the Fire Marshal" following which Roi B. Woolley, Assistant Editor, FIRE ENGINEERING, discussed new developments in fire fighting that the war has contributed to the fire service, and the post-war problems of the service.

An interesting demonstration of the use of the mobile short-wave radio and "walkie-talkies" was conducted by Chief Paul Heinz and his assistants.

Butane Proves Insurance Puzzle

Texas butane gas handlers are having a difficult time getting insurance rates fixed on their explosive commodity to comply with a new law enacted by the last legislature, it is reported.

The new act, which went into effect Sept. 4, provided that butane dealers must carry a minimum of $10,000 personal injury and $5,000 property damage insurance.

Insurance companies were said to be reluctant to write the butane insurance because, they claim, the gas is so powerful that when it explodes there is generally a heavy loss of property or life, or both.

The State Insurance Commission has had under advisement various plans for fixing rates which insurance companies may charge and the Texas Butane Dealers Association have authorized formation of an insurance company to underwrite the new policies that are required.

Prominent at New Hampshire Chiefs' Club Conference

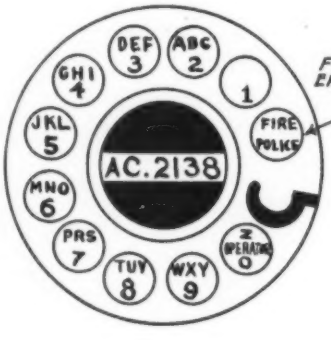
Top row, left to right: Chief Vernon T. West, president, New Hampshire Fire Chiefs' Club; Chief Anthony Molloy, Nashua, N. H.; Commissioners Simon St. Laurent, Everett Whitney and Victor Cote, Nashua. Bottom row, left to right: A. C. Hudson, secretary, New Hampshire Board of Underwriters; Percy Bugbee, National Fire Protection Association; Chief Daniel B. Tierney, Arlington, Mass., secretary-treasurer, International Association of Fire Chiefs; Chief Paul P. Heinz, New Haven, Conn., and Roi B. Woolley, assistant editor, FIRE ENGINEERING.

Short Cuts and Gadgets

TO SPEED EMERGENCY ALARMS

From Thomas F. Gerity, Cleveland, O., come a number of ideas, two of which have to do with simplifying and speeding the sending of fire alarms.

Perhaps for mechanical or other reasons unknown to us Brother Gerity's "Short Cuts" may not be feasible at this time, but they certainly deserve consideration of the fire service.



Top: Center of Dial, Giving Emergency Numbers for Police and Fire. Left: Dial with Separate Hole for Emergency Numbers

The first idea is to place emergency numbers on each telephone dial-disc, as pictured, so that people would become more familiar with them. This method of placing fire and police emergency telephone numbers where every time the telephone is used the user will be reminded, should result in less likelihood of telephone calls for fire going astray due to the use of the wrong number or the incorrect exchange by an excited person.

The second suggestion is for a special telephone dial-hole for all emergency telephone calls. There would be no numbers to dial; the user would simply lift the receiver and pull down the first dial hole marked "FIRE-POLICE". Connections would be immediately made with the fire-police operator and there should be no delay or confusion. In towns where there isn't any fire or police operator the local telephone operator could send the emergency calls to fire or police headquarters or proper authorities.

The illustration shows the standard telephone dial disc with fire-police dial-hole.

* * *

MORE ABOUT WEDGES

In reading your November (1944) edition of FIRE ENGINEERING on page 807 under "Short Cuts and Gadgets" there is an article about using a small wedge for holding open doors.

This same peg may be used to hold up windows where the rope has been broken. It also serves as a good sprinkler stop.

We have all been issued two of these pegs to carry as part of our equipment in our bunker coats.

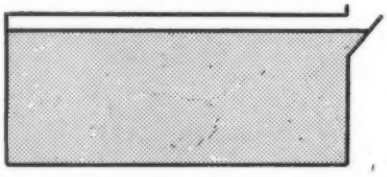
DON LICHLITER
Fire Station No. 3
Miami, Fla.

TO QUICKLY FILL BOOSTER TANK

From Henry T. Hanson, Maynard, Mass., comes an idea for a trough-type booster-tank filler that should be of interest to community fire departments that must take their water to the fire—but let him tell it in his own words:

"In rural communities where there is no public water supply system, booster-tanks must often be utilized to their utmost, by being replenished by a bucket brigade from a well, or by water trucked in milk cans or other receptacles from a distant pond or stream.

The trough-type filler, located on the side of the truck shown here, has been



CROSS SECTION OF TANK

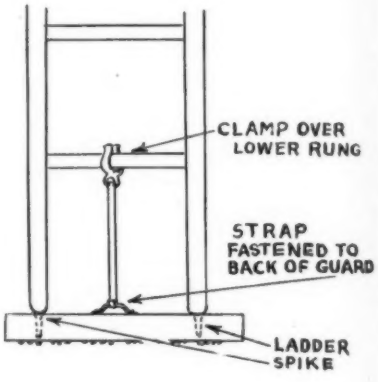
found to have several advantages over the conventional type, namely: more than one person may pour into the tank at the same time, persons pouring into this type filler do so while standing on the ground, and the inevitable spillage falls on the outside of the truck instead of over the equipment in the truck body.

The photograph shows the lip of the trough below the ladder (arrow). The sectional view shows the construction.

* * *

TAIL-END WARNING SIGNAL

There have been numerous accidents caused by persons and vehicles running into the long ladders protruding from the ladder-beds of service trucks. In some, the ladders considerably overhang the chassis and body of the apparatus.



The fifty-foot and longer ladders are the most deadly, most of them having a spike on the butt-end with the ladder itself sticking out at just about the height to cause injury to personnel.

The gadget diagrammed consists of a wood panel guard, on which are mounted common red or white reflector buttons spelling out the word "DANGER" or "FIRE". This panel fastens over the spiked butt of the longest ladder as indicated and is held in position by a simple clamp and strap which permits its easy release when the ladder is to be removed.

It has been found that the guard with its reflector signal helps to warn off vehicles that may approach from the rear.

W. B. R.

Arrow Shows Placement of Trough on Apparatus

For Practical Discussion of Current Fire Department and Fire Management Problems

BOOSTER TANK CAPACITIES

MOST of the chiefs participating in this round table are of the opinion that the capacity of a booster tank used for controlling brush or rural fires should be "large enough to serve the purpose." Some chiefs mention specifically that the capacity of the tank must not be less than 250 gallons, depending on the area the truck must cover. Some cities have a hilly terrain to traverse, and for that reason could not have too large a booster tank, as the truck would be too heavy.

Not all the departments reporting have a portable pump to aid in replishing the tank, but the chiefs are almost unanimous in their belief that one should be included in the equipment carried. Other equipment listed included fog nozzles; brush fire equipment, such as brooms, rakes, etc.; back pack pumps; walkie talkies, etc.

Readers are invited to send in their comments on this subject, which will be continued in the December issue. Address communications to Round Table Editor, FIRE ENGINEERING, 24 West 40th Street, New York 18, N. Y.

Discussion of the Topic

H. S. Ettinger, Chief, Newtown, Pa.: My opinion is that the booster tank capacity on apparatus used for brush and rural fires should not be over 500 gallons because of the bad roads and bad bridges over which it must travel. The water alone weighs over two tons without the apparatus and if the booster tank capacity were greater, the apparatus would be too heavy.

Sixty per cent of all fires in our rural district are put out with booster lines as it is a distance away from our large streams.

Most of the companies fill their booster tanks with buckets and portable pumps.

I believe the special appliances desirable on rural trucks should include back pack pumps and a portable pump that would pump around 50 gallons per minute at 65 pounds pressure. This could be placed at a small stream or at a well and would supply enough water for the booster tank.

Paul Z. Knier, Chief, Manheim, Pa.: I do not believe that anything less than a 250 gallon tank should be used on apparatus for brush and rural fires.

About fifty per cent of brush and rural fires are controlled with booster lines supplied only by water from the booster tank.

The booster tank is replenished with buckets or milk cans hauled by small trucks such as farmers use. In some cases a portable pump is used.

I believe these units should have a portable pump that can be carried to any water supply for the purpose of replenishing the booster tank.

John F. Curtin, Chief, Lambertville, N. J.: It has been proven to our satisfaction that the booster tank should be of at least 250-gallon capacity instead of the usual 50 or 60 gallon.

In rural districts twenty-five to thirty per cent of the fires are controlled with lines from booster tanks.

In most cases in the rural districts the farm has a well from which we can draw. We have been able to keep the fires small because of carrying enough water in the booster tank.

For rural fire fighting we believe a special truck equipped with fire extinguishers, back pack pumps, brooms, shovels should be used.

John E. Weiland, Chief, New Lexington, Ohio: In this locality, which is hilly, we have found that a booster tank of 200 gallons capacity is desirable.

One per cent, or less, of brush and rural fires are controlled with booster lines.

The booster tank is replenished by buckets from whatever source of supply is available.

I believe the rural truck should be of the bulldozer type with blade in front for skimming weeds, grass and sod for a fire break or lane. The booster tank should be of 200 gallons capacity and should be equipped with 2½-inch, 1½-inch and ¾-inch hose. A portable gasoline powered auxiliary pump should be included for keeping booster tank filled. The auxiliary pump should be of 250 to 300 gallons capacity, or of sufficient size to supply at least 2½-inch and booster hose for use directly on the fire if necessary, as well as filling the booster tank on the truck. Hard suction hose of sufficient length to reach water supply should be included. All nozzles should be equipped with both straight and spray tips.

The unit should include a breaking plow for hitching to rear of truck, flood lighting, hand lamps, pike poles, ladders, brush hooks, fire rakes, brooms, portable pump tanks, cant hooks for rolling logs, buckets, shovels, mattocks, axes, wire cutters, a roll of fence wire for repairing damaged or cut wires, smoke masks, back firing equipment, tank of drinking water, first aid equipment, walkie talkies, etc. Last, but not least, a good crew of men trained in this class of fire and building temporary earthen dams in creeks.

F. G. Kadel, Chief, Ingram Volunteer Fire Department, Pittsburgh, Pa.: For brush fires a tank capacity of from eighty to one hundred gallons is desirable if ¾-inch hose and a fog nozzle is used. We have had no experience with rural fires.

About seventy-five per cent of the brush fires we fight are controlled with booster lines.

We replenish the booster tank by drafting from source of supply if at all possible, if not, by bucket brigade.

I believe fog nozzles and brooms are desirable on these units.

C. V. Durham, Chief, Lebanon, Ohio: I do not believe that over 600 gallons of water should be carried in the booster tank, depending on the terrain.

We use booster tanks in not over five per cent of the fires in rural districts because it is too hilly here.

Buckets or creeks if close enough, are used to replenish the water supply in the booster tank.

I believe back pack pumps, brooms and rakes should be included on apparatus of this sort.

Robert A. Allison, Chief, Swarthmore, Pa.: I believe that booster tank capacities of from 150 to 250 gallons are desirable. Booster tank lines are used to control eighty-five per cent of the brush and rural fires in our town.

We replenish our booster tank by pumping from creeks, springs, wells, etc.

I believe fog nozzles are desirable on booster pumping equipment.

O. E. Hirst, Chief, Galena, Ill.: I believe the capacity of a booster tank should be 200 gallons. Fifty per cent of brush and rural fires in our town are controlled with lines supplied from the booster tank.

When the supply runs out, it is replenished by means of buckets, pails, etc.

It is my opinion that a device such as a water turbine, or something

(*Continued on page* 891)

HERE IS THE QUESTION

1. **What, in your opinion, should be the booster tank capacity on apparatus used for (a) brush and (b) rural fires?**
2. **What per cent of fires, (a) brush and (b) rural, are controlled with booster lines supplied only by water from booster tank?**
3. **How is the water in booster tank replenished when operating at fires beyond reach of municipal supplies?**
4. **What special appliances or equipment do you feel are desirable or necessary on these units?**

Manufacturers' Announcements

Huxel Industries Have New Stretcher

The new light, portable Hux-a-Mat "Fold-N-Bag" Stretcher has been introduced by Huxel Industries, 1001-2 Keith Building, Cincinnati 2, Ohio.

The device is the development of Captain Walter C. Huxel, veteran of the Cincinnati Fire Department, inventor of numerous safety and salvage tools and equipment including the Huxbar.

Hux-a-Mat is complete stretcher, opening to full 7-foot length and 25-inch width, to support 500 pounds, yet which can be rolled quickly and compactly to fit a carrying case, measuring only 28 by 8-in. It has a number of advantages, according to its pronouncements: flexibility; no poles; 8 handles; keeps injured dry and warm; enables injured to be carried in any position through narrow, winding corridors of trains, airplanes, etc.; weighs only 10 pounds.

Huxel Industries are known to the fire service as manufacturers of the Huxbar, the all-emergency tool for the fire service, industries, transportation and innumerable other fields. The 36-inch Huxbar, with its Brinell hardness of 388 and tensile strength of a heavy duty axle—175,000 lbs. per square inch—weighs only 8½ pounds.

U. S. Navy and Army are reported to be large users of Huxbar, as are many leading municipal fire and police departments.

Literature describing these Huxel products is available on request.

Pyrene Fire Prevention Show

Every Fire Prevention Week for the past fifteen years the Newark Safety Council has sponsored a Fire Show with the assistance of engineers of the Pyrene Manufacturing Company and the C-O Two Fire Equipment Company.

This year's Show was conducted at the Pyrene Proving Grounds before a crowd of over 600 persons from New Jersey and New York.

The stellar attraction of the Show was a miniature "conflagration" involving an oil fire in a transformer; oil in two work tanks, each forty feet square; oil in a dip tank of 95 square feet, with a ten-foot diameter bonfire around the base of tank; oil-filled bilge of 450 square feet; miscellaneous machinery area of 150 square feet, oil and gasoline soaked, and oil in an elevated dip tank of 100 square feet.

Homelite Holds Sales Meeting

Introducing many new developments in a greatly expanded line of portable gasoline-engine-driven generators, pumps and blowers, the Homelite Corporation of Port Chester, N. Y., recently held a one-week meeting at its plant for all of its sales representatives.

Demonstrating Power Driven Tools at Homelite Meeting

Homelite Corporation representatives from every part of the country witness demonstrations of newest gasoline-driven generators operating pumps, power tools and blowers.

More than forty new Homelite units were demonstrated to the representatives to show the use of latest type generators in the operation of flood-lighting as well as power tools, including the newest high-cycle types. New methods of ventilating were demonstrated by the use of small portable gasoline-driven blowers.

Oren Enters New York State

Oren Fire Apparatus Company, Roanoke, Va., has announced its first deliveries of motor fire apparatus to New York State, a 500 GPM pumper with 200 gallon tank; body for 1250 ft. of 2½-in. and 2,000 ft. of 2½-in. hose mounted on Dodge chassis, to Cicero, N. Y.

The South Schenectady Fire Department of the Town of Rotterdam, Fire District No. 6 is having Oren build a special 500 GPM pumper with 1000 gallon booster tank, 500 gallon 2-stage pump and special body with compartments to hold a portable light plant, portable pump, a 40-ft. and 20-ft. ladder mounted overhead. This truck will also have an Indian Pump filler and a gated connection in rear underbody for soft-suction that is connected at all times and used for quickly filling tank from hydrant. This particular fire district does not have any hydrants, but the adjoining city does.

Sales were made by the Doray Fire Equipment Company, Oren distributors for the area.

Fire Prevention Show "Conflagration" at Pyrene Proving Grounds

How to Fight Vehicle Fires

The General Detroit Corporation, Detroit, Mich., is conducting a crusade against motor vehicle fires. Literature released by the company, including an effective booklet "How to Put Out a Motor Vehicle Fire" points out that seven out of eleven trucks are inadequately protected against fire, and tells the vehicle operator what to do in case of fire in his car or truck.

The booklet has twenty-four pages of descriptive text and illustrations that should be helpful to every fire protection and prevention advocate.

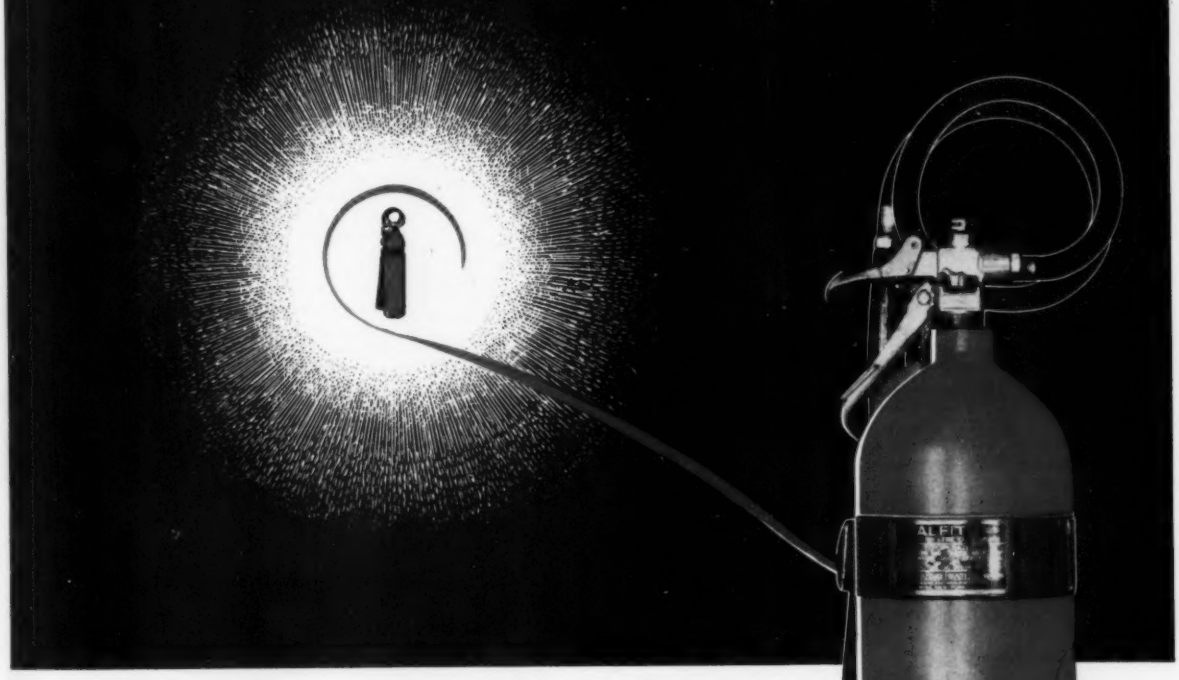
Bulletin on Pack-Type Cutting Kits

The Welders Service Company, Inc., 210 Boulevard of the Allies, Pittsburgh, Penna., has issued an illustrated bulletin on its "Packo" Oxy-Acetylene Emergency Cutting Outfit, Pack-Type.

The literature includes operating and maintenance instructions.

A GIANT *in a* JIFFY

Alfite Speedex expands 450 times to smother fires instantly



ALFITE *SPEEDEX FIRE EXTINGUISHERS*

The instant the lever is pressed an avalanche of stored-up fire-smothering Alfite carbon dioxide snuffs out flammable liquid or electrical fires.

A giant in a jiffy . . . Alfite Speedex Fire Extinguishers expand 450 times their stored volume to give you quick and positive protection. They are easy to use and easy to service. They only occupy a floor space less than a small waste paper basket.

Write for Alfite literature describing the new Speedex models.

AMERICAN-LAFRANCE-FOAMITE CORPORATION

ELMIRA, N. Y., U. S. A.

Please mention FIRE ENGINEERING *when writing advertisers*

The WATCH DESK

Overhauling the firemanic news of the day

by ROI B. WOOLLEY

Smoke in Her Eyes

In Toledo, Ohio, according to contrib' Charles Mensing, Mrs. Elizabeth J. Savage sought a divorce from her husband, William, because he "frequently fell asleep" while smoking cigarettes. But Judge Paul Alexander granted the decree on grounds of gross neglect and awarded Mrs. Savage custody of the couple's two children.

The firemen are expecting to pay William a visit any moment.

* * *

"Excitement" Blaze Overcomes 12 Firemen

James J. Wagner, eighteen, of Brooklyn, a machinist's helper at the Flatbush Avenue depot of the Long Island Railroad, craves "excitement." As a result, he was lodged in jail on a charge of malicious mischief in connection with a fire at the freight depot, early one September morning.

Edward R. Cantwell, Assistant Fire Marshal, said Wagner, who has a medical discharge from the Navy, admitted starting a fire in a storeroom at the depot, "just for the excitement." He said the youth also admitted starting at least a dozen small fires in other places since Aug. 12.

Twelve firemen were overcome by smoke fighting the depot fire, which was discovered soon after midnight. Battalion Chief Frederick Muesele, whose headquarters are Engine Co. No. 219, suffered fractured ribs and was hospitalized in Brooklyn.

It's said that the culprit would have received a much stiffer charge were it not for his service record.

* * *

A Blot on the Escutcheon

It's bad enough when a citizen sets a fire, but it's criminally tragic when a fireman stoops so low.

In New London, Oneida County, N. Y., Fire Chief William Francis Donahue, 32 years old, has been arrested on charges of first degree arson.

Donahue waived examination and was ordered held for the Grand Jury after Sgt. Benjamin Butler of the State Police Bureau of Criminal Investigation accused him of setting three fires at nearby Stacy Basin.

Butler charged that on September 1, Donahue set fire to the loading platform of the Empire Canning Company's plant, a blaze that was extinguished without apparent damage, and that later he touched off fires which destroyed the District 17 schoolhouse and a $15,000 barn on a farm.

* * *

Longest Hit of the Year!

Here's one for the book—and Ripley. In Niagara Falls, Joe Barrett of the Juniaga soft ball team hit what was probably the longest home run in history—at least the longest "soft ball" home run in "them parts"—when he smashed out a long drive and the ball landed, of all places, in a fire truck, heading for a fire!

The ball, say reports, was recovered at the scene of the fire, over a mile from the ball park!

Fire Can't Scorch Faith

In Beresford, S. D., wind and fire have not caused the small congregation of the nearby Zion Evangelical Church to lose faith.

Three times within forty-five years, wind and fire have destroyed the church building. Four times the congregation has built, always on the same spot.

* * *

Our Ronkonkoma Raconteur

This one comes from a Long Island vamp who prefers to remain incog. It is dated Sept. 10, from Lake Ronkonkoma, and it tells about a burglar who, when he found no money after burglarizing the Commercial Garage, wreaked his vengeance by wrecking the office and then setting fire to the place.

This isn't all of the yarn. Seems that Charles E. Cornell of Patchogue (pardon if these names are bit confusing) was driving past and saw the fire. He sped to the firehouse to spread the alarm. Alas, he couldn't find it—the alarm, we mean. The button on the siren, if there was such, was kaput or something. Not to be outdone, Cornell grabbed a rock and beat out an alarm on a 50-year old steel railroad locomotive tie that hangs ferninst the firehouse as a relic.

It worked! We don't know much more about the fire or the burglar!

* * *

Fireless Fire Fools Firemen

In Cambridge, N. Y., hundreds of interested villagers turned out in a thunderstorm, Sept. 1, to watch a "spectacular fire" which did not burn. Even the firemen were taken in says the press.

Firemen, responding to an alarm, on the jump, trained their hose nozzles on the Rice Seed Company's clock tower, all ready to go to work, before they discovered that "sparks" flying from the door were insects illuminated by a concealed floodlight! (Thanks, P.P.T.).

* * *

Not Praticin' What He Preached?

Out in Albany, Ore., on September 13, Chief Don Hayne was interrupted during his stirring address to the Albany Chamber of Commerce on the subject of "the prevention of fires in your home."

Returning to the platform half an hour late, says the wayward press, Chief Hayne explained just why he had been called away. The fire house had burned almost to the ground!

* * *

Lambent Tomatoes—and "Green Inmate"

In Newark, N. J., four fire engines, a rescue squad, two ladder trucks and various assorted other equipment raced to the Ivy Hills Alms House September 13, in response to an alarm of fire. Firemen don't relish the idea of a blaze in such an institution, so they made time!

The "fire" turned out to be nothing more than the sun shining on a row of ripe, red tomatoes, transformed to flames by the imagination of a "green" inmate with a strange sense of humor.

Take four Old Fire Department!

An Iowa clipper sends us the story about the feud between the members of the Carroll, Ia., city council and Fire Chief Joe Daniel of that community. Seems that things have gone pf-f-f-ft.

Some of the council were right critical of the fire department at one of their meetings, claiming the "trucks were going too fast . . . some of the firemen driving like they're crazy" as one councilman put it. 'Twas also said two trucks were seen racing each other on Highway 30 . . . that they were also driven faster than necessary on practice nights and fear was expressed "someone might get hurt."

At the next meeting of the city dads, Chief Joe Daniel was on hand. And he withheld no verbal punches. The session was marked by "flaring tempers, charges and counter-charges and a good deal of profanity" (that's the press account). Sez Daniel, he was "good and tired" of taking criticism . . . and he didn't like the red tape involved in taking one of the trucks to country fires. "I've been restricted and criticized so much I'm good and tired of it," Daniel told the council. "I've got to call the mayor or two councilmen every time I want to take the . . . truck to a country fire. If I'm not capable of taking that truck out, something's funny." He wound up: "If you wan't it (the fire department), take it and run it. I'll step out—the whole department will step out. I think we've given the citizens of Carroll all they've asked for and more."

Police informed mayor and council that they had "never seen a fire engine going over 35 miles per hour" and had observed they always stopped for traffic signs. The Chief confirmed this, saying the truck cannot exceed 45 miles an hour because it is overloaded, etc.

Councilmen decided they weren't "mad at the firemen" and later "voted an expression of confidence in the department." Could we say that now everybody's singing "peace carols in Carroll?"

* * *

Hot Off the News Tape

President John P. Crane, of the Uniformed Firemen's Ass'n. N. Y. C., has written President Truman asking that New York City firemen serving with the armed forces, who have the required numbers of points for discharge, be given preference in the order of their release to help bring New York fire-fighting forces back toward normal strength. . . . The nation's first radio-equipped bus is operating on the routes of the Washington, Virginia and Maryland Coach Company, the General Electric Company announced Sept. 15. One of the advantages claimed is that should a fire break out along the route, the bus can, via its company headquarters, relay the alarm to the nearest F. D. . . . New York City has changed the name of Sixth Avenue to "Avenue of the Americas."—which will cost the city plenty to changes its records, etc.—and give the N.Y.F.D. more headaches. Watchmen will now call out "Box 787—Avenue of the Americas and 42nd Street!" What's coming next?" query the Brothers. . . . . A man was found stabbed to death with an icepick in the flaming kitchen of his apartment in Philadelphia, Pa. Fire was caused by upsetting of an oil lamp "apparently in a scuffle."

(*Continued on page* 896)

15-LB. SIZE

CD/Fog

CARBON DIOXIDE

DESTROYS FIRE BY "FREEZING" ACTION

Using a one-two punch to knock out dangerous fires, CD/Fog smothers and "freezes" flame in one swift action. Its frigid blast of carbon dioxide envelops the blaze, shutting off the oxygen necessary for combustion. Equally effective at temperatures of 120° above or 40° below zero. Finger Tip control gives split-second action. Available in sizes ranging from 2 lbs. to 100 lbs.

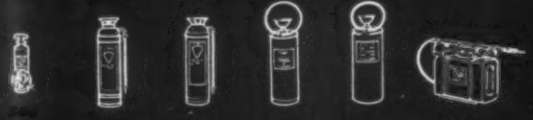
WHERE TO USE CD/Fog

Quickly effective on Class B and C fires (gasoline, oil, grease, flammable liquid, electrical, flammable gases, luminating gas, paint).

HOW TO USE CD/Fog

Carry close to fire. Hold horn with one hand. Direct at base of fire and sweep from edge to edge. Open valve wide, or gradually blanket entire area.

IF IT'S GENERAL IT'S DEPENDABLE



Let General Protectioneers prescribe the right extinguisher for your every fire hazard.

Remember—you need fire extinguishers in your home and that hard-to-replace automobile

THE GENERAL DETROIT CORP.

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FALSE ALARMS

He Was Satisfied

Briggs took the ticket the agent gave him, picked up his change, and walked away.

A few moments later he was back again at the ticket window.

"I say," he said to the clerk, "you gave me the wrong change just now."

"Sorry, sir," said the agent, with a shrug of his shoulders, "it cannot be rectified now. You should have called my attention to it at the time you bought your ticket."

"Well, that's all right, then," said Briggs, with a faint smile. "I'm not worrying. You gave me five dollars too much."

Daffynitions

ADULT—A person who has stopped growing at both ends and started growing in the middle.

ECHO—The only thing that can cheat a woman out of the last word.

HOSPITALS—Places where people who are run down wind up.

SAILOR—A man who makes his living on water but never touches it on shore.

Many a rural romance has started on a gallon of corn and ended with a full crib.

A minister, in the habit of opening all sermons with the words: "Why are we all here?" went to preach in a sanitarium. As usual, he started his sermon with: "Why are we all here, why are we all here?" From the audience came a voice: "We're all here because we're not all there."

Ted: "My feet burn like blazes. Do you think a mustard bath would help?"

Ned: "Sure! There's nothing like a little mustard on hot dogs."

One wolf we know is too broke to buy etchings so he always asks his girl friends to come up and see the handwriting on the wall.

Of Course

A mother wished to enter her five-year-old daughter in a kindergarten, the age requirement of which was six. To the disapproving teacher the mother explained, "She can easily pass the six-year-old test."

"Say some words," the teacher said rather skeptically to the child.

The little girl surveyed the teacher with dignity, and turning to her mother, asked, "Purely irrelevant words?"

Homer

"What did one little strawberry say to the other little strawberry?"

"If we hadn't been in the same bed together, we wouldn't be in this jam now."

Student: "I hear the Board of Trustees is trying to stop necking."

Coed: "That so? First thing you know they'll be trying to make the students stop, too."

"Know what the ceiling said to the four walls?"

"Nope."

"Hold me up, boys. I'm plastered."

A Military Success

A soldier and his bride have gratefully named their first child "Furlough."

"So you met your wife at a dance. Wasn't that romantic?"

"No. Embarrassing. I thought she was at home taking care of the kids."

Duckin' Season Opens

Fire Chief: "See that covey of quail over there in the underbrush?"

Commissioner: "Yes, I see them."

Fire Chief: "Well, watch me shoot a hole clear through the red barn behind them."

"I read some interesting statistics today. For every man over 85 years of age there are seven women."

"Yah—but it's too late then."

Interne: "Doctor, Mrs. Gotmuch has varicose veins. How can I cure them?"

Doctor: "Rubber stockings."

Interne: "What! And get my face slapped?"

Now, Sheriff!

"Sheriff Brown said Jackson apparently killed himself before setting fire to the house."

Customer: "I wish to try on that dress in the window."

Clerk: "Sorry, lady, but you will have to use the fitting room."

Defendant: "When I learned the business was crooked, I got out of it."

Prosecutor—"So I heard—how much?"

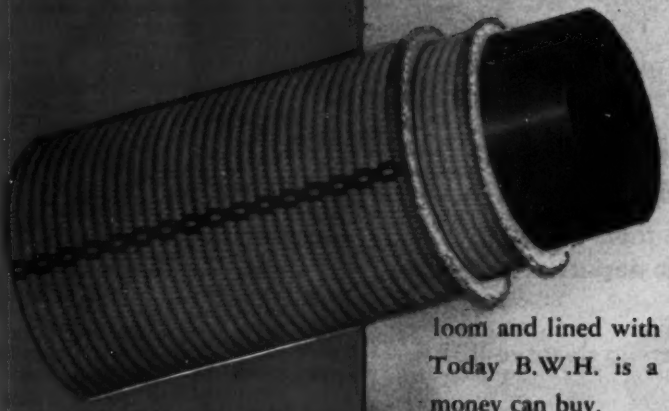
Newcomer: "Does the wind always blow this way?"

Native Son: "No, sometimes it blows the other way."

Definition: A bachelor is a man who wouldn't take "yes" for an answer.

MADE BY THE ORIGINATORS OF MODERN FIRE HOSE

BWH FIRE HOSE



The Boston Woven Hose & Rubber Company were the originators of modern fire hose, — the first company to make a fire hose with a cotton jacket woven on a circular loom and lined with a rubber tube.

Today B.W.H. is a symbol of the finest fire hose money can buy.

We were the pioneers, and are today one of the largest producers of municipal fire hose in the world.

We also operate a thoroughly modern Brass Foundry, equipped with the latest type furnaces, and a complete Finishing Shop for producing couplings, pipes, nozzles and fittings for B.W.H. fire hose.

INSIST ON B.W.H. FIRE HOSE

"THERE IS NO SUBSTITUTE FOR *Experience*"

BOSTON WOVEN HOSE TRADE MARK AND RUBBER COMPANY

BOSTON WOVEN HOSE & RUBBER COMPANY

Works: CAMBRIDGE, MASS.
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BUY MORE BONDS

Buying a NEW PUMPER?

Equally important with the question—"What pumper shall I buy"? is the question—"What pump shall I specify"?

You cannot afford pump failures.

Hundreds of Fire Chiefs stake their reputations and the efficiency of their departments on WATEROUS PUMPS.

We've worked hard for 59 years to deserve this confidence.

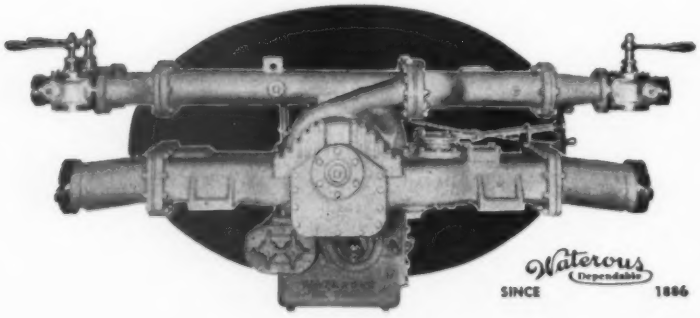
WATEROUS PUMPS lead in performance, long life—and all-round DEPENDABILITY.

Principal makes of fire apparatus are equipped with WATEROUS PUMPS. There's a size and type for every purpose. For your next pumper—specify WATEROUS!

Literature on request

WATEROUS COMPANY • ST. PAUL, MINNESOTA

Also Manufacturers of WATEROUS Fire Hydrants



WATEROUS FIRE PUMPS

Echoes of the War

By Roi B. Woolley

Incendiary Bombs

At the beginning of the war, the Army Air Forces used comparatively few incendiaries. But when the conflict shifted to the Pacific, the proportion of fire bombs to other bombs increased, and all-incendiary bombings of vulnerable Japanese targets became routine.

In the European operations only about 6 per cent of the bomb loads were incendiaries, whereas in the Pacific offensive this ratio amounted to 19 per cent. For both theatres the percentage of fire bombs was 10 per cent. In round figures, the bomb tonnage dropped in the war is broken down as follows by the Office of Chemical Warfare Service: In the European theatre, 106,000 incendiaries were dropped and 1,555,000 of all other types, so that the total is 1,661,000. In the Pacific theatre, 115,000 incendiaries were dropped and 502,000 other types, so that the total is 617,000. And don't overlook those two atomic specimens—each equal to over 20,000 tons of other type bombs!

* * *

Hot Off the News Ticket

A San Francisco grand jury absolved "all parties concerned" of blame for heavy property damage and accidents in which thirteen persons lost their lives and 1,059 were injured during the three-night "peace riots" in that city. . . . Discarded flame-throwers are now being used in the Louisiana sugar cane fields to burn out weeds. . . . The Orontes, 20,000-ton Orient liner which has been serving as a British troop transport, caught fire anl burned for nearly six hours in London docks. . . . When 3,000 four-gallon cans of gasoline caught fire and exploded at Deal (England) five U. S. Negro soldiers were killed and six seriously injured. . . . Investigation revealed that lightning caused the crash of a British transport plane in which fifteen persons met death. Authorities said that lightning struck and exploded the plane's fuel tanks. . . . Vast stores of poison gas held in Britain for retaliation against Germany had she started chemical warfare, are being sunk in the Atlantic, about twenty miles out to sea off the west coast of Ireland; scientists say that's the cheapest and safest way to get rid of it. . . . It is said that 2,000 persons are being killed every month while wandering through German land-mine fields. More than 100,000,000 of the buried weapons must still be removed, say officials. Based on estimate of one life lost for every 5,000 mines recovered or rendered safe, 20,000 lives will be lost. . . . While a crowd of 3,000 at LaGuardia Field looked on, the pilot of a four-engined Air Transport Command C-54 made a successful emergency landing after gasoline fumes made it necessary for him to return to the airport after taking off for Prestwick, Scotland. Twelve pieces of Fire Department apparatus, Army and airport crash equipment, police and other services, were lined along the apron and runway as the C-54 came in for a landing. . . . Two men were killed and six injured aboard the 40,000-ton British battleship Vanguard. Damage was believed to be extensive. . . . Virtually all waterfront activities in Philadel-

"You call that a *FOG* nozzle?"

Reporter: "I don't get it. You throw a solid stream into that sixth story window — and you call it a 'fog' nozzle!"

Chief: "It is amazing, isn't it? Ever since we bought those new Elkhart nozzles, the boys won't use anything else. Would you believe it, that nozzle throws a solid stream as far as our regular type, and —"

Reporter: "I can see that, chief. But what's this talk about a *fog* nozzle?"

Chief: "I'm coming to that. Watch this. A twist of your wrist, and presto—there's your fog! *Solid* fog, too, because those teeth deflect a part of the water toward the center."

Reporter: "Say, that's got it! Ought to make a swell story."

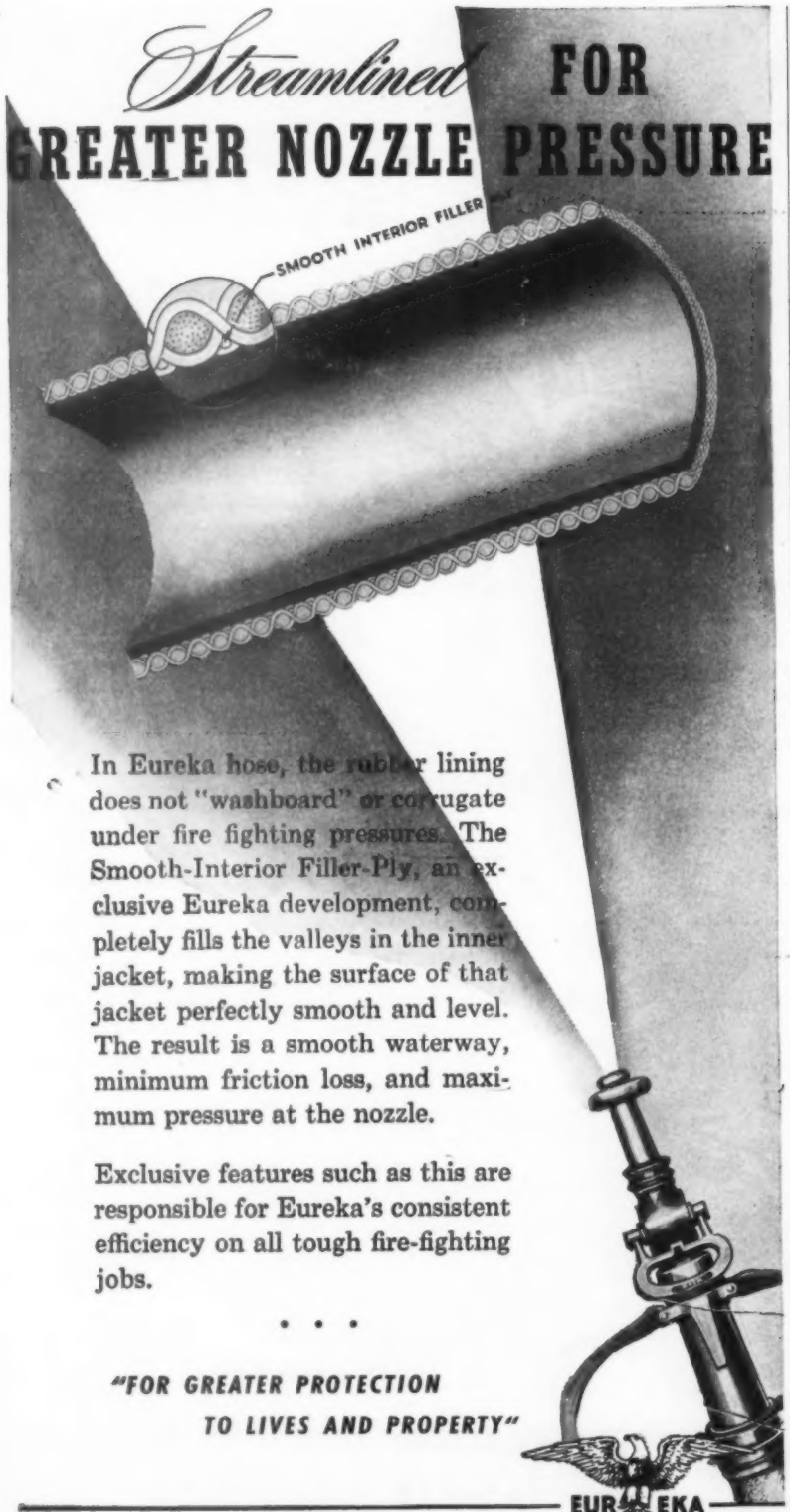
Chief: "That's only half of it, Bill. Think of what this means to the property owner. I have it on good authority that up to 60% of water damage can be avoided by using the fog at close range, especially in residences. Now that we've got 'fog' right at our fingertips, there's no reason for excessive water damage any more."

For Solid, Straight Stream to dense, saturating FOG

THE NEW ELKHART *MISTery* NOZZLE
FIGHTS ALL FIRES

For complete information on this new all-purpose nozzle, see your jobber, or write Elkhart Brass Mfg. Co., Elkhart, Ind.

Streamlined FOR GREATER NOZZLE PRESSURE



In Eureka hose, the rubber lining does not "washboard" or corrugate under fire fighting pressures. The Smooth-Interior Filler-Ply, an exclusive Eureka development, completely fills the valleys in the inner jacket, making the surface of that jacket perfectly smooth and level. The result is a smooth waterway, minimum friction loss, and maximum pressure at the nozzle.

Exclusive features such as this are responsible for Eureka's consistent efficiency on all tough fire-fighting jobs.

• • •

"FOR GREATER PROTECTION TO LIVES AND PROPERTY"

EUREKA

EUREKA FIRE HOSE

Division of United States Rubber Company

1230 SIXTH AVENUE • ROCKEFELLER CENTER • NEW YORK 20, N. Y.

phia, Pa., remained at a standstill when 500 tugboat workers at the Port struck. Added fire hazards gave firemen cause for concern. . . . Only one of twenty-one homeward-bound European war veterans, passengers aboard a military transport plane which crashed and burned at Kansas City, Mo., September 15, remained alive. The crew of three also perished. . . . Lynn G. Adams, Commissioner of the Pennsylvania State Police, was appointed Chief of the Police and Fire Department Organization Branch, Public Safety Division, United States Council. Adams is working on reconstruction of the German police and fire services on a basis of local control and responsibility. . . . Two deer hunters reported September 20 they had found a Japanese incendiary balloon in the Dry Lake vicinity near Lassen National Park, Calif. . . . At long last, New York State has abolished most of its wartime agencies and activities, continuing only those considered essential to the post-war reconversion period. . . . At least ten men were killed in the crash of an Army bomber, believed a B-29, about five miles from Wedowee, Ala. It was reported that the ship appeared to "explode before it struck." . . . War nervousness has not abated in Seattle, Wash., despite the signing of the peace treaty. Resounding crashes and flashes of light, September 1, resulted in jammed switchboards to Navy, Army and newspaper offices. Final result—weather bureau announcement of a local thunder-and-lightning storm over Puget Sound. . . . An explosion of a 35-mm. German-type automatic pistol seriously wounded a fourteen-year-old boy student of Hillside Junior High School at Montclair, N. J. It's said the lad found the weapon with two others in an empty house. . . . The ex-German liner Europa, docked in New York City with 4,314 troops. Former N. Y. F. D. Batt. Chief Dreesen is in charge of the ship's fire-fighting. The vessel is reported to have had five fires almost simultaneously while in Bremerhaven, before leaving.

* * *

Port Chicago Damage Heavy

The Port Chicago, Calif., ammunition explosion of July 17, 1944, has resulted in payment or recommended payment of damage claims totaling $1,869,114.83 according to Associated Press reports.

Secretary Forrestal of the Navy announced 2545 property damage claims and 45 personal injury claims aggregating $463,510.25 have been paid by a special board of investigation.

In addition, the Navy has recommended to Congress $68,224.28 for personal injury and $1,337,380.30 for property damage as just claims, which require congressional approval.

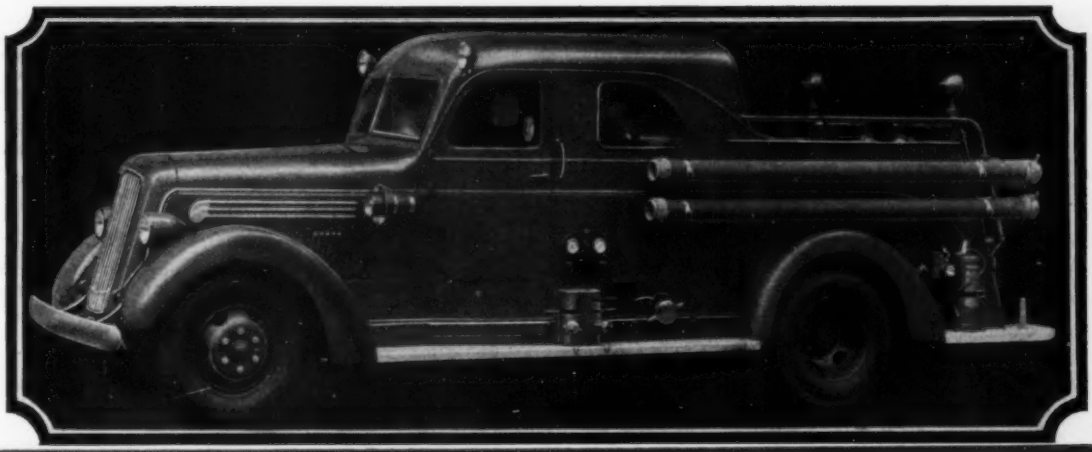
* * *

Navy Explodes 125 Tons TNT—"Quietly"

According to press reports, an explosion of 250,000 pounds of TNT, set off by the U. S. Navy in an eastern Idaho desert wasteland, was something of an auditory flop.

Many residents of Idaho Falls, 30 miles away, some of them a bit anxious as to what might happen, said they didn't hear the sound of the blast at all. Similar reports came from elsewhere in Idaho.

However, the experiments satisfied the Navy, according to Capt. Walter E. Brown, Commander of the Pocatello Naval ordnance plant. He told the press



Dependability Built Into Every Model!

The Fire Services of America know that they can depend upon Seagrave Apparatus twenty-four hours in the day, every day in the year. The engineering skill and mechanical perfection that go into every Seagrave model are a guarantee of trouble-free performance. Seagrave Apparatus is the lowest price insurance for the lives and property of your city.

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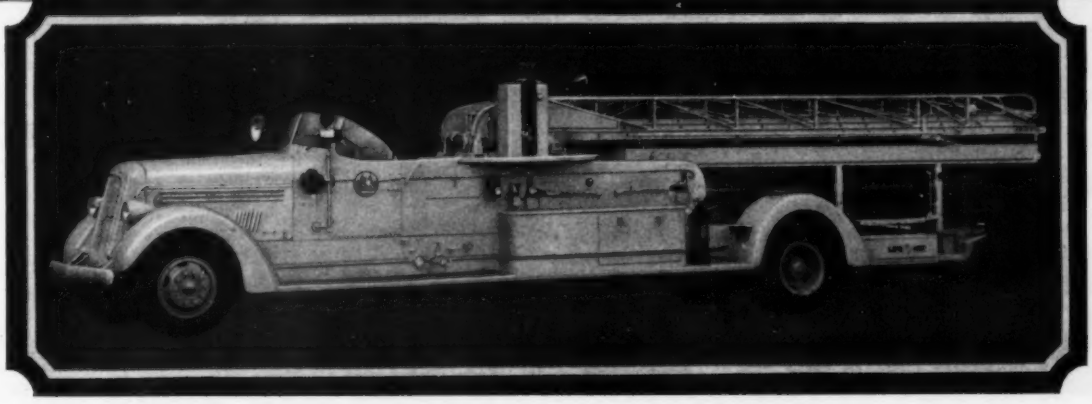
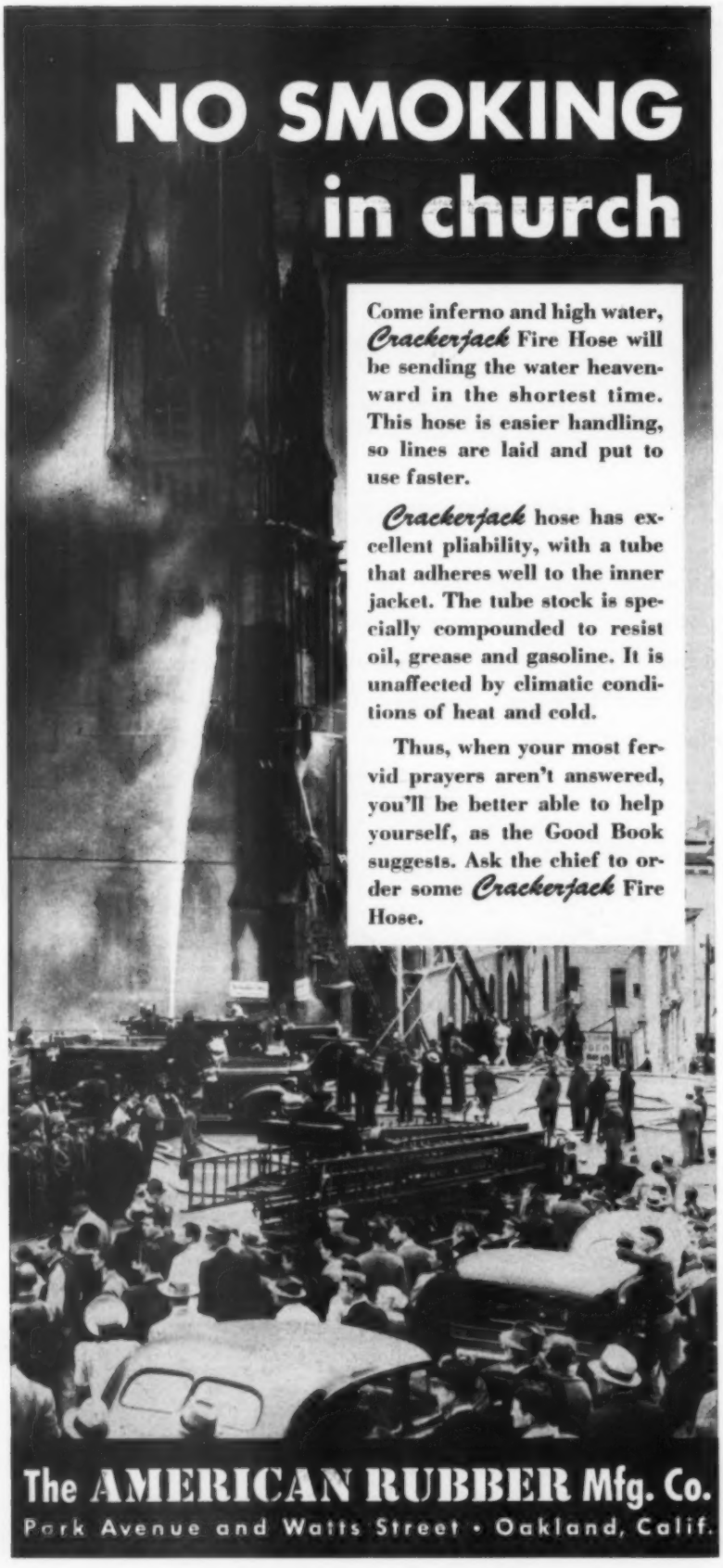
THE GREATEST NAME IN FIRE APPARATUS




NO SMOKING
in church
Come inferno and high water, Crackerjack Fire Hose will be sending the water heavenward in the shortest time. This hose is easier handling, so lines are laid and put to use faster.
Crackerjack hose has excellent pliability, with a tube that adheres well to the inner jacket. The tube stock is specially compounded to resist oil, grease and gasoline. It is unaffected by climatic conditions of heat and cold.
Thus, when your most fervid prayers aren't answered, you'll be better able to help yourself, as the Good Book suggests. Ask the chief to order some Crackerjack Fire Hose.
The AMERICAN RUBBER Mfg. Co.
Park Avenue and Watts Street • Oakland, Calif.

"powder magazines were located 100 feet and farther from the center of the explosion and none exploded or was damaged, yet one-half mile away in a standard made barracks structure the glass windows were blown out.

The explosion was said to be part of an experiment dealing with the safe storage of powder returned to Idaho from the war zones.

* * *

Even Mice Aided Bomb Project

It is disclosed that more than 25,000 Maine-grown mice were part of the "Manhattan Project" which developed the atomic bomb.

According to Dr. Clarence C. Little, director of a cancer research organization which raises mice for medical experimentation, the War Department received a large share of the 312,844 mice shipped from the laboratory last year. Between 25,000 and 30,000 went to "Manhattan Project", according to the doctor, to determine if irradiation from the elements used in manufacture of the bomb would have any effects upon workers in the atomic bomb plants. He adds that the Army is still continuing experiments with the mice to determine if irradiation would effect either the mice exposed to it or their descendants. Final report on the experiments would not be available for a long time.

* * *

Mistook Oil Flares—Crashed!

Warren Hardenberg, 26, of Fitzmaurice Airport, Amityville, L. I., was killed near Rockport, Ind., when his plane crashed and burned as he was attempting an emergency landing in an oil field.

The former test pilot for Republic Aviation Corp. was part of a flight of four Navy craft which were being ferried from Cape Girardeau, Mo., to Amityville to be used in a crop-dusting project.

It is believed the victim mistook flares in the oil field for landing lights at Memorial Airport, Evansville, Ind. Other pilots and their planes landed safely.

Impact of Wartime Fire Defense

(*Continued from page* 831)

ticularly where concrete construction is prevalent.

The Fire Service of America must be progressive, it must keep abreast of all modern developments, it must be ready to meet new fire hazards introduced by new scientific discoveries and industry with agressiveness.

Above all we must fight official inertia. Too many high-ranking fire officers study hard to achieve their position and then coast on their laurels, content to let their successors worry about improvements and innovations.

We must improve our training standards, revamp our training school methods, resort to actual fires to actually train firemen.

We must learn to cooperate with one another; firemen have learned this; it accounts for the increased interest in fire service organizations.

The U. S. Navy is anxious and willing to cooperate with the Fire Service of America and is removing security re-

The Roof is Falling!

Hundreds of firemen are lost each year because they cannot hear the command to get out. Unaided, the human voice is too weak to rise above the din and turmoil of a fire.

But with the Guided Radio Portable Electric Megaphone* the voice is amplified 2500 times! Lives are saved, commands transmitted with clarity and obeyed with precision.

Chief, Guided Radio Portable Electric Megaphones are truly life savers — ready for every emergency. They're light in weight; equipped with internal storage batteries and charger to prevent battery failure. Guided Radio's dry battery model is now available for uses where lower power megaphone is desired.

"Manufactured under U.S. Patents and Applications"

WRITE FOR INFORMATION

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ELECTRIC MEGAPHONE

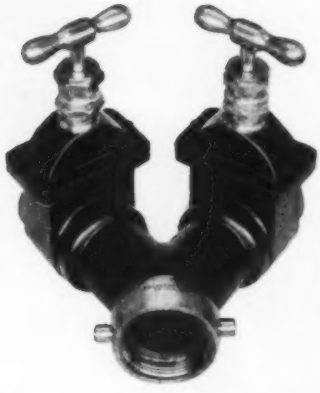
GUIDED RADIO CORPORATION, 161 6th Avenue, New York 13, N. Y.

It will help if you will mention FIRE ENGINEERING *when writing advertisers*

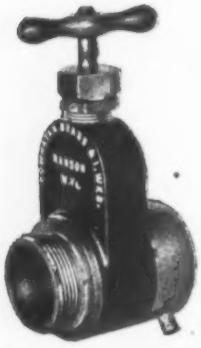
Chief POWHATAN

SINGLE or SIAMESE

GATE VALVES



FOR RUGGED FIRE SERVICE



HERE are gate valves that are made to stand up year after year in the toughest fire service. . . . Time savers and money savers! . . . Built, like every other item in our complete line of Fire Department brass goods, to the highest standards known in the industry.

Catalogue on request.

POWHATAN BRASS and IRON WORKS
RANSON, WEST VIRGINIA
Phones 93 & 94 Charles Town, West Virginia
Established 1892

strictions from its gear and publications. In a few months, it will be possible to purchase the Navy Fire Fighting Manual from the Superintendent of Documents for a nominal fee to cover the cost of printing.

Our emergency planning must be visionary and up to date. Should another war ever burst on civilization the fire service of America must be geared and ready to operate on a moment's notice. Perhaps we should have a National Fire Service organized and ready to function. The next time we will not have time to organize after the first bomb.

Fire is a major weapon of war and it requires trained fire fighters to cope with it.

On the home front we must continue to aggressively fight fire hazards and seek common sense legislation to curb new fire risks.

We must encourage publicity to keep America fire-conscious, and above all we must dedicate our lives to the further continued improvement of the fire service of America.

Persons in the News

Retirements and Promotions

Assistant Chief A. Heinzman of the Los Angeles County Fire Department retired September 1, 1945, after twenty years service. He joined the department Jan. 1, 1945. Battalion Chief W. B. Klinger has been appointed temporarily to the position of Assistant Chief.

Chief Thomas E. Baker, Dover, Del., Fire Department, who has been nominated for another term as chief, is completing his tenth year in office as head of the department. Hughlett A. Golt, First Assistant Chief, was also renominated for that post.

S. Walter Van Nostrand, Chief of the Roosevelt, N. Y., Fire Department and former Fire Commissioner in the same area, has been appointed to the position of Consultant with the Division of Housing, State of New York, following a competitive examination.

It is reported that Mr. Van Nostrand will work on codes to eliminate unsafe and uninhabitable buildings as a member of the recently inaugurated Community Development Section of the Division of Housing. For the past four years and more Mr. Van Nostrand served as fire protection engineer with the Federal Housing Authority, Washington, D. C.

James Thompson, Jr., who left the Irvington, N. J., Fire Department, on military leave, and saw service in the Navy's Fire Fighters Schools, as a commissioned officer, has returned to Irvington and resumed his duties as Chief of Department.

Chief Charles D. Toole has retired after serving as Chief of the Vero Beach, Fla., Fire Department for tweaty-two years. He helped organize the department in 1923 and was appointed Chief the same year.

Chief Toole served one year as president of the Florida State Firemen's Association and was also a member of the International Association of Fire Chiefs

C-O-TWO TRADE MARK REG. U.S.

Protects MILLION DOLLAR MACHINES against fire!

DIPPING TANK, ROLLERS AND IMPREGNATING MACHINE PROTECTED BY TEN C-O-TWO DISCHARGE NOZZLES AND TWO HEAT DETECTORS. AUTOMATIC "RATE-OF-RISE RELEASE" AT CONGOLEUM-NAIRN, INC., KEARNY, NEW JERSEY.

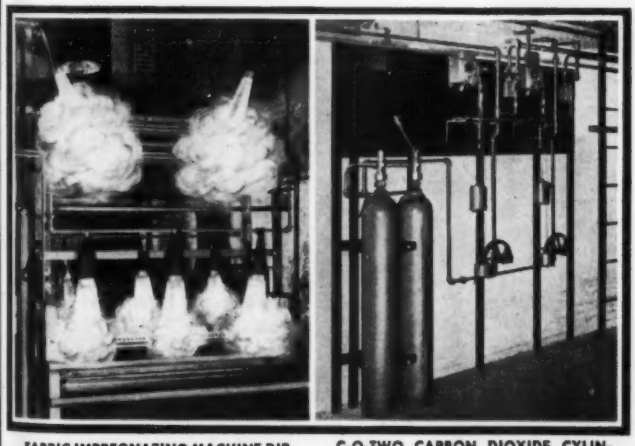
IN the vast plant of Congoleum-Nairn, Inc., in Kearny, New Jersey, equipment valued at over a million dollars is protected from fire by C-O-TWO installations.

Huge dipping tanks, rolling and fabric impregnating machines filled with highly flammable oils, lacquers and resins operate under the safe, sure and constant protection of C-O-TWO automatic fire extinguishing carbon dioxide systems. Under such critical conditions, the fastest, safest, most effective method for killing fire is imperative, and Congoleum-Nairn, Inc., has, as have the Armed Forces and hundreds of other plants and manufacturing concerns throughout the country, selected C-O-TWO to give instantaneous and maximum protection to valuable equipment and personnel.

C-O-TWO heat actuated detectors operating on the rate-of-rise principle guard this valuable equipment night and day. They never sleep. Any sudden rise in temperature, in a protected area, causes these devices to set off the C-O-TWO system. Automatically, the operation of that particular machine is shut off, and volumes of sub-zero fire-killing carbon dioxide gas are discharged from the strategically placed nozzles, and the fire is extinguished in seconds without damage to equipment or materials.

C-O-TWO fire extinguishing systems may be arranged to protect one or a series of spaces from the same battery of cylinders. C-O-TWO also manufactures a complete line of carbon dioxide Portables, Hose Reel, Wheeled Type units and Smoke Detecting Systems. Write for information.

C-O-TWO Kills Fire
Saves Lives and Property

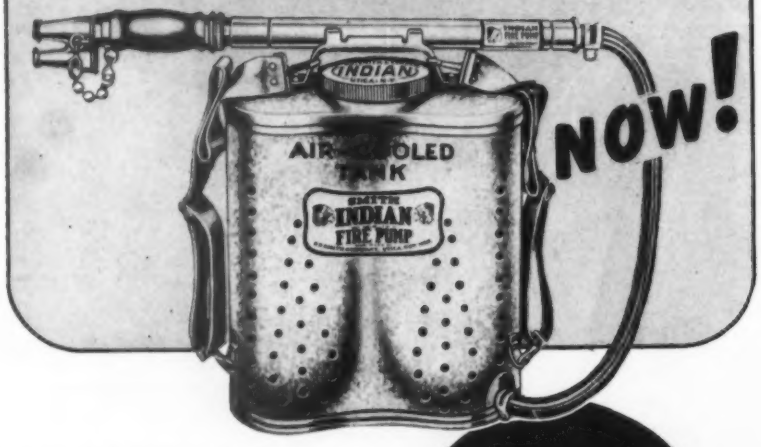


FABRIC IMPREGNATING MACHINE DIPPING TANK AND ROLLERS PROTECTED BY C-O-TWO AUTOMATIC SYSTEM. HEAT DETECTOR FOR AUTOMATIC "RATE-OF-RISE RELEASE" IS LOCATED BETWEEN CENTER DICHARGE NOZZLES. CONGOLEUM-NAIRN, INCORPORATED.

C-O-TWO CARBON DIOXIDE CYLINDERS PROTECTING TWO FABRIC IMPREGNATING MACHINES. PNEUMATIC SWITCH AT RIGHT AUTOMATICALLY SHUTS OFF VENTILATION, STOPS MACHINE ON FIRE, AS CARBON DIOXIDE GAS IS RELEASED.

C-O-TWO FIRE EQUIPMENT COMPANY
NEWARK 1 NEW JERSEY
Sales and Service in the Principal Cities of United States and Canada
AFFILIATED WITH PYRENE MANUFACTURING COMPANY

ORDER
INDIAN FIRE PUMPS NOW!



THEY USE ONLY CLEAR WATER

Now is the time to check over your supply of these "one man fire departments" and see how many you need to be fully equipped. Hundreds of professional fire fighters can't be wrong when they say no other piece of fire fighting apparatus gives them so much service.

NO CHEMICALS Necessary

Clear water alone does the job—no chemicals to bother with. Big, rustproof, 5-gal. tank carries on the back or by carrying handle. Pump throws powerful 30 to 50 ft. pressure stream or nozzle adjusts to fog-mist or coarse spray. Letters like the one below are our best advertisement.

Send for catalog and price list.

D. B. SMITH & CO.
Utica, N. Y.

Our department has 6 *INDIAN FIRE PUMPS* and all the firemen are well pleased with them. Since equipping with *INDIANS*, we have discarded our soda acid extinguishers. When called out to a fire, the first thing the men grab are your *INDIAN FIRE PUMPS* and they certainly DO A SWELL JOB.

Yours very truly,
NATRONA VOLUNTEER HOSE COMPANY.

D. B. SMITH & CO.
406 MAIN STREET, UTICA 2, N. Y.
Pacific Coast Branch
Hercules Equip. & Rubber Co., 435 Brannan St., San Francisco, Calif.

Send for Catalog

and the Southeastern Fire Chiefs Association.

William Dassler of Hawthorne, N. Y., was named president of the Westchester Volunteer Firemen's Association at its annual meeting, October 17, in Pelham Manor, N. Y. Other officers are: George Nolte, Mount Vernon, first vice president; Frank Teasdale, Hastings, second vice president; Charles E. Jahne, Pleasantville, treasurer; L. H. Okon, Harrison, recording secretary; Howard S. Gear, Rye, financial secretary; Cornelius Falch, Rye, Sergeant-at-arms, and Lester M. Hill, Elmsford, chaplain.

J. H. Tebens, formerly captain of the Babylon, L. I., Fire Department and later Chief Specialist (Firefighter) U.S.C.G. has accepted a position as safety and fire protection officer with the Borden Company in New York City.

Effective October 1, Eugene King, Assistant Chief of the Granite City, Ill., Fire Department, retired from the Department after having been a member of the organization since May 1, 1907. Elmer Forcade was appointed Assistant Chief to fill the vacancy.

Arnold Gibson, former Chief of the Alton, Ill., Fire Department resigned from the Department in September last, to join a private corporation.

Two veterans, whose total time with the Blue Island, Ill. Fire Department adds up to 83 years, retired in July. They were Fire Chief John Link, who joined the Blue Island Volunteer Fire Company No. 1 in 1895 and Fireman Charles Beeley who has been a member of the department since 1902.

Obituaries

Chief Paul Frank Hoberg, 40, of Hobergs and Sieglers Fire Dept., Lake County, Calif., died October 22. He had been chief of the department for 21 years. He was a member of Callayomi Lodge No. 282 F. and A.M.; Middletown member Lower Lake Parlor Native Sons of the Golden West, International Association of Fire Chiefs, Pacific Coast Association of Fire Chiefs, Northern California Fire Chiefs' Association, and California State Firemen's Association.

The City of Hoberg was named after Chief Hoberg's father.

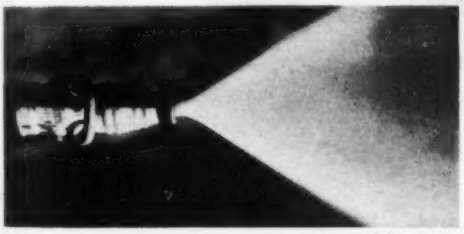
Assistant Chief George Hoberg was appointed Fire Chief of the Hobergs and Siegler Fire Dept., Lake County, Calif. following the death of his brother, Chief Paul Hoberg. He had been Assistant Chief of department for 20 years.

Fire Chief Thomas Dow, 70, a member of the Methuen, Mass., Fire Department, died October 8 following a short illness. During his period of service with the suburban fire fighting force he had directed that department's activities three times, the last time for 21 consecutive years.

He became a call fireman with the suburban fire department, C. H. Tenny Hook and Ladder Company in 1896 and was appointed head of the department in the early 1900's. He resigned in 1907, continuing to serve as a regular fireman. In 1909 he was re-named chief and

The Correct Stream FOR EVERY FIRE

Fog
Solid Stream
Water Curtain
Solid Stream and
Water Curtain


Variable Fog

Solid Stream

Water Curtain

YOU GET ALL
EFFECTIVE STREAMS
BY EASY POSITIVE ADJUSTMENT

The Riepling UNIVERSAL NOZZLE

provides quick stream selection by separate shutoff on either straight stream or fog. It eliminates the necessity of carrying extra nozzles or spray tips.

USES LESS WATER

The fog opens at 1° and can be adjusted to a 130° water curtain, with or without solid stream combination at any stage. The opening discharge never impairs vision nor causes severe water damage.

You should know more about the Riepling Universal Nozzle that is now used by many Municipal Departments, and U. S. Coast Guard Vessels, Naval Air Stations and Army Air Fields.

Send for complete description, sizes, and water discharge data.

George E. Sleeper COMPANY

ENGINEERS

FOUR STREAM SELECTIONS • FOGS ON 90 POUND PRESSURE • USES LESS WATER

Fight it With *Maximum* Protection and Comfort . . . in

GOODALL BOOTS and COATS

GOODALL Boots and Coats have a reputation among the Nation's firefighters for rugged durability, long wear and the greatest possible comfort.

The boots are of tough black rubber with slip-proof soles and inside and outside gum knee patch. Strong wood "ladder shanks" reinforce arches to ease the strain of long ladder stands. Wide guards at shank provide added resistance to punctures. Made in short, "Storm King" and full hip lengths.

Style 19 Fire Coats are of dull finish black rubber with corduroy band collar, square-cut shoulders, strap-and-buckle sleeves. Made for severe service, yet light weight, comfortable. Length 46". Sizes 34 to 46.

GOODALL FIRE HOSE: Chemical Engine or Booster Hose, in wrapped or moulded-and-braided constructions; Fire Engine Suction Hose; Underwriters' Unlined Linen Fire Hose; Fire Hose with "Fognozls" attached. (See back page of most issues of "Fire Engineering" for "FOGNOZL" details.)

Contact our nearest branch or main office for details and prices of these reliable products by GOODALL . . . "On the Job LONGER!"

GOODALL

THE GOODALL-WHITEHEAD COMPANIES

Philadelphia - Trenton - New York - Chicago - Pittsburgh - Boston
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WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF NATIONAL SYNTHETIC RUBBER CORPORATION

Factory — Trenton, N. J. Established 1870

served until 1913 when a change in administration resulted in a new department head. In 1924 he was re-appointed Chief, which position he held until his death.

He was a member of the board of directors, Methuen Board of Trade, also of John Hancock Lodge, F. and A.M.; Hope Lodge, 34, I.O.O.F.; Kearsage Lodge, Knights of Pythias, and Saggahew Tribe, 60, I.O.R.M. He was affiliated with the Massachusetts Fire Chiefs Association and the Methuen Firemen's Mutual Relief Association. (Thanks, Chief O'Hearn.)

Chief J. W. Churchill of the Halifax, Nova Scotia, Fire Department died on September 25. He was buried on the 28th, with full fire department honors.

Chief Churchill was a past-president of the Dominion Association of Fire Chiefs and was widely known throughout the Canadian fire service.

Former Fire Chief H. McCallum of the Lindsay, Ontario, Fire Department, died suddenly on October 15. He was a member of the Dominion Association of Fire Chiefs.

Chief George S. Wright of the Roselle, N. J., Fire Department, died in his sleep Friday morning, October 5, as a result of a heart ailment.

Chief Wright was directly responsible for building the Roselle Department into a modern, efficient organization. Under his administration, new personnel and new apparatus were added to the Department.

Chief Wright was appointed a fireman in July 1924 and became chief in 1933. (Thanks Ernest Day)

Peter Lind, 80, for 32 years Chief of the Cairo, Ill., Fire Department, until his retirement about three years ago, died in July after a long illness. He was appointed Fire Chief in 1910.

For several years Chief Lind was a member of the Executive Board of the Illinois Firemen's Association.

While responding to an alarm of fire, Sept. 12, Engineer R. F. LeMay Engine Co. 20, Los Angeles County Fire Department died of a heart attack. He was 51 years old.

J. J. Powell, for more than 25 years Chief of the Griffin, Ga., Fire Department and known as the "father of fire prevention" throughout the south, died October 7. He had just completed plans for observance of fire prevention week. He was a member of the board of stewards, Meridian Sun Lodge, Masons.

Chief Powell came to Griffin from Muscle Shoals, Ala. where he was in the fire department during World War I. Prior to that he was assistant chief at Meridian, Miss.

Assistant Fire Chief John J. Hines, 58, Secretary of the Bridgeport, Conn., Fire Department since 1916, died suddenly at his home on October 27. He was in charge of clerical work in the fire department for twenty-nine years and was one of the founders of the Firemen's Sick Benefit Association and the Mutual Death Fund. Fire officials from several cities in Southern Connecticut attended his funeral. (Thanks Tom Magner)

Portable Pump
FOR DUMP FIRES

There's no sense tying up a valuable engine at a dump fire when you can use a Homelite Portable High Pressure Pump. Light enough for one man to carry, one of these Gasoline-Engine-Driven pumps will draft water from a nearby stream, brook or well. With pressure up to 90 pounds there is plenty of water to put out a fire fast.

Seeing is believing. Ask for a demonstration of the actual stream and force that you can get out of a Homelite Portable High Pressure Pump. Simply write us and we'll arrange to have your nearest Homelite man call on you soon. No obligation, of course.

Homelite Corporation
Portable

PUMPS · GENERATORS · BLOWERS
PORT CHESTER, NEW YORK

Kindly mention FIRE ENGINEERING *when writing advertisers*

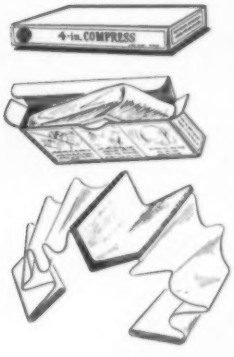
Invaluable in Emergencies

Easy to Maintain!

M·S·A

Fire Department

FIRST AID KITS



Metal-cased, weatherproof and dustproof, containing unit-packaged first aid dressings and treatments for instant use in emergencies. M.S.A. Type D packaging system saves space—bandages are compressed under high pressure, sterilized and wrapped to preserve sterility. Antiseptics and ammonia, in individual treatment sizes, are hermetically sealed against leakage. Tourniquet, wire splint, burn treatment, forceps, scissors, etc., are quickly available when needed. Refills of all items are obtainable promptly—our warehouse stocks assure quick service! Write for details.

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MINE SAFETY APPLIANCES CO.

BRADDOCK, THOMAS AND MEADE STREETS

PITTSBURGH 8, PA.

DISTRICT REPRESENTATIVES IN PRINCIPAL CITIES

Timothy L. Hagarty, retired Chief of the Meriden, Conn., Fire Department, died at his home in that city, October 25 after a brief illness. He was a fireman for fifty years and Chief from 1930 to 1932.

Chief Hagarty joined the Meriden Fire Department as a callman in 1888 and was appointed permanent fireman in 1906. In 1908 he was advanced to lieutenant and in 1911 appointed captain. (Thanks Tom Magner)

Reuben D. Weekes, 86, former chief of the Providence, R. I., Fire Department died October 6, after a long illness. He was a member of the department for 39 years and had been serving as chief for 12 years when he retired, in 1921.

During the career, in which he saw the change from horse-drawn to steam engines, then to gasoline powered automobiles, he helped in fighting several big fires including the Aldrich House fire, 1888, and the Theater Comique fire, a few days later.

He joined the department in 1882, became a lieutenant in 1891, captain in 1895, district chief in 1906 and in 1909 was promoted to chief of department. (Thanks Chief O'Hearn)

Chief Charles H. French Dead

Chiefs and other officials and members of the fire service from all parts of New England joined with public service officials, fraternal and business associates and representatives of the New England Fire Underwriters Association in paying tribute to Fire Chief Charles H. French, at funeral services held at Grace Episcopal Church, Manchester, N. Y., Sunday October 14. Chief French died suddenly Thursday, October 11, at his home that city, after a career of forty-two years with the Manchester Fire Department, eighteen years of which he served as Chief. The casket was escorted by members and auxiliaries of the Manchester Fire Department headed by Deputy Arthur J. Provost.

Only two days before his death, Chief French was in his office at the Central Fire Station and the week preceding attended the Nashua, N. H., conference of the New Hampshire and New England groups.

Chief French was born on May 18, 1879, in Manchester and became interested in fire-fighting in early youth. He joined the old Hose Company No. 1, now out of existence, on February 22, 1902.

Through his tireless work and deep interest in both fire fighting and fire prevention, he was promoted to a call lieutenant July 22, 1905, in the same company and on September 1, 1909, he was made captain on the permanent force and promoted, also to the office of superintendent of fire alarms.

After being with the department six years, on January 1, 1915, he won advancement to the rank of deputy chief—and two years later he succeeded Thomas W. Lane, when the latter retired as chief. He took over his new duties in July, 1917. The Fire Commission came into being the same year Chief French was appointed to office, thus he was the first and only appointee of the Commission to hold the office of Chief.

In his years as head of the Manches-

OFFICIAL U. S. NAVY PHOTOGRAPHS

MEARLFOAM 5

Safe Pathway to Inferno

TIME AND TIME AGAIN, fliers (see circle) have been lifted from their hot seats and carried to safety on carpets of voluminous, fire-resistant foam composed of myriad tiny bubbles *filled with air.*

Note how this war-born, blended multi-protein foam of high fluidity spreads rapidly over the fire forming a welded mat or airtight blanket. These official U. S. Navy photographs clearly illustrate how it beats back fire and holds it back.

MEARLFOAM-5 strangles the hottest gasoline or oil fire and remains a live, efficient foam blanket long after the fire itself is dead. It puts fire out and keeps it out. It quickly builds up a six- or eight-inch welded air-foam mat which seals out the oxygen on which fire feeds. It adheres to solid surfaces and will pile up an inch or two of fire-smothering dense foam on even perpendicular surfaces. Any break or rupture in the foam blanket heals automatically. Fire-resistance is maintained during aging.

The many unique and dependable properties of MEARLFOAM-5 are the sole reasons the U.S. Navy uses it extensively for preparedness . . . and for the quick extinguishment of raging gasoline and oil fires on shipboard and at shore bases. MEARLFOAM-5 is the veteran of many successful engagements, and now is ready to demonstrate to all—the super effectiveness of mechanical (air) foam as the most successful, modern method for combatting gasoline and oil fires.

MEARLFOAM-5, after putting fire out —*keeps it out* . . . totally eliminating the flashback hazard which in the past has taken such a terrible toll.

MEARLFOAM-5 is a good-mixer—with any type of water. It works at maximum efficiency in any climate or atmospheric condition. Always dependable.

When split-seconds count—you can rely on MEARLFOAM-5 to put fire out fast—to keep fire out *permanently!*

A one-page condensed data sheet detailing the unique properties of this war-born fire-fighting foam is now available on request.

Completely safe and non-corrosive—may be used with standard Mechanical Foam-Forming Equipment

FOAM ON FIRE OUT... Stays OUT!

THE MEARL CORPORATION
153 Waverly Place, New York 14, N.Y.

THE CHIEF WRITES A LETTER!

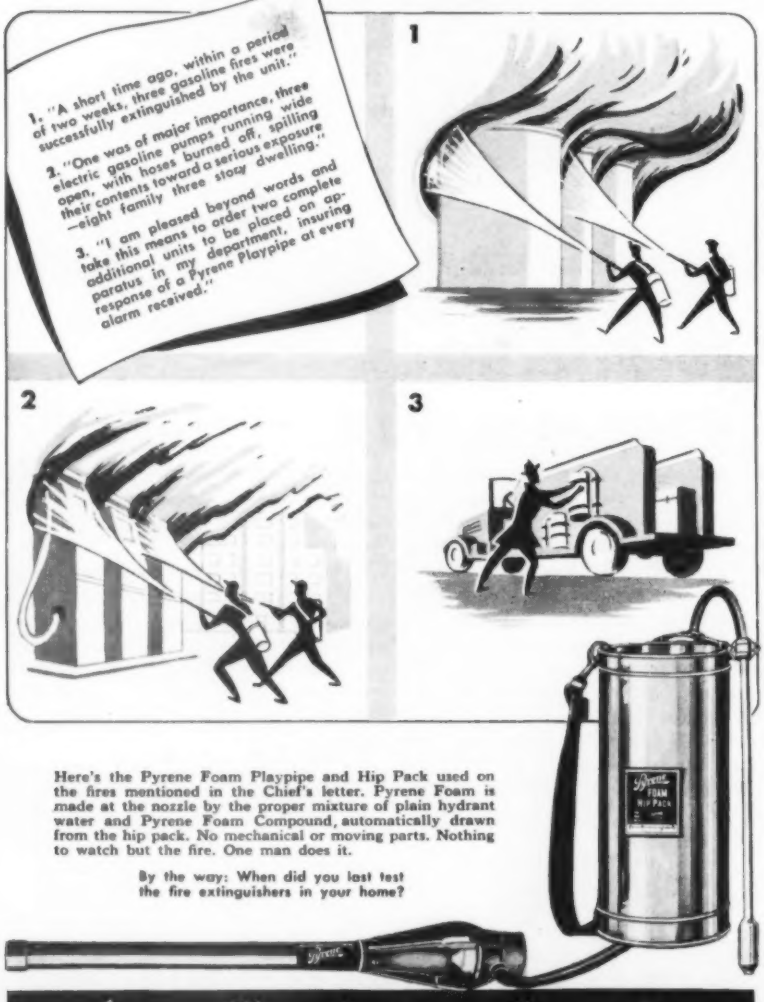
Thank you, Chief, for your letter which will find a permanent place with thousands of others, like yours, voluntarily written. In the meantime we'll quote from your letter and use it as the basis of this advertisement. In closing your letter you wrote ". . . I find the small portable hip pack and playpipe with its versatility is outstanding as applied to my particular problems in my community."

Signed.....
Chief, Department of Public Safety

1. "A short time ago, within a period of two weeks, three gasoline fires were successfully extinguished by the unit."

2. "One was of major importance, three electric gasoline pumps running wide open, with hoses burned off, spilling their contents toward a serious exposure —eight family three story dwelling."

3. "I am pleased beyond words and take this means to order two complete additional units to be placed on apparatus in my department, insuring response of a Pyrene Playpipe at every alarm received."



Here's the Pyrene Foam Playpipe and Hip Pack used on the fires mentioned in the Chief's letter. Pyrene Foam is made at the nozzle by the proper mixture of plain hydrant water and Pyrene Foam Compound, automatically drawn from the hip pack. No mechanical or moving parts. Nothing to watch but the fire. One man does it.

By the way: When did you last test the fire extinguishers in your home?

Pyrene Manufacturing Company
NEWARK 8, NEW JERSEY
AFFILIATED WITH THE C-O-TWO FIRE EQUIPMENT CO.

ter Fire Department, Chief French raised that organization to a position of eminence, while achieving for himself nationwide prominence and popularity in the fire service. He was quick to adopt and devise new improvements in his department and devoted much special thought to fire alarm communications.

The Chief was active in organization work. He held membership in the International Association of Fire Chiefs and New England Association of Fire Chiefs, of which he was president in 1926. He was at one time active in the Massachusetts Fire Chiefs' Club and in the National Fire Protection Association. He also served as president of the Manchester Firemen's Relief Association.

Robinson New Manchester Chief

Captain Aubrey G. Robinson, for twenty-three years a member of the Manchester Fire Department, has been made Chief of that department, following the death of Chief Charles French.

He was for the past eighteen years the late chief's driver and aide. He is a graduate of the New York City Fire Department Fire College, where he took a course in fire investigation in 1939.

Chief Robinson became a standing member of the department in September, 1922, and a permanent member in January 1924. He was named lieutenant in January, 1928, and assigned as chauffeur to Chief French. In November, 1939, he was promoted to Captain.

Since 1940, Chief Robinson has served as secretary to the New Hampshire State Firemen's Association. He is married, has a son just discharged from the Navy and two daughters. Another son was lost in the Pacific while serving the Navy.

Canadian Personalities

Fire Chief Jack C. Miterlla, head of the City of St. Thomas Fire Department since 1923, has retired. He served overseas with the Corps of Canadian Fire Fighters for nearly a year as a company commander at Portsmouth, England. His successor is Chief Alex Sutherland who has been with the St. Thomas Fire Department for over 20 years.

Chief Ernie McGinnis has been named as full-time fire chief of the Town of Weston, Ontario. He also was with the Corps of Canadian Fire Fighters overseas.

Chief Cory Moore has been named to head the City of Cornwall Fire Department (Ontario), which is being reorganized from a volunteer to a full-time fire department. Former Chief Hunter, who has given many years of service, has been retained with the rank of deputy chief pending his retirement due to age.

The Corps of Canadian Fire Fighters has returned to Canada from service overseas after completing more than two and a half years duty in England with the British National Fire Service. Commanding Officer Gordon Huff of the Corps was awarded the O.B.E. as recognition of the work of these Canadian firemen and was decorated by the King before returning to Canada.

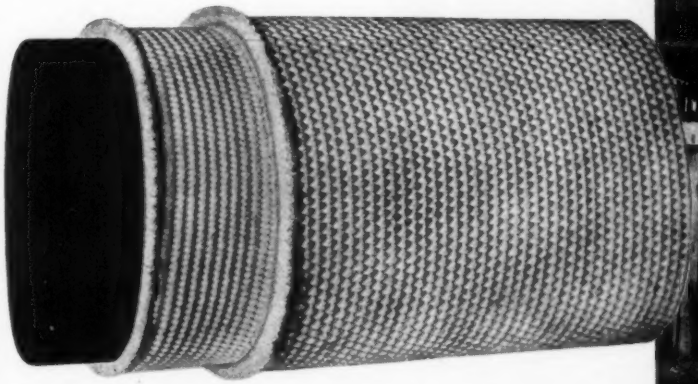
FIRE strikes swiftly!

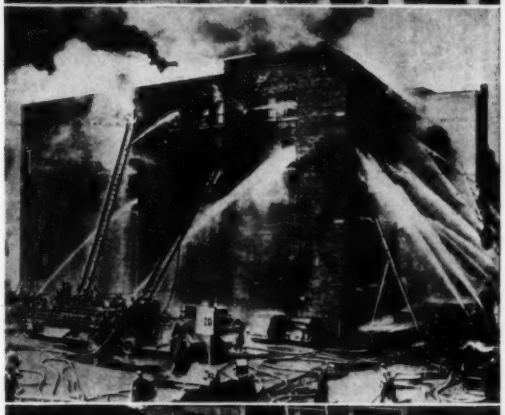
EVERY fire presents a problem all its own to the fire fighters. Minutes are valuable, and every Chief wants hose that will stand the pressures when action gets at fever heat. There is no time to take out a bursted section.

QUAKER, during the war, manufactured millions of feet of Quality Fire Hose, and a large portion saw active service in many strategic points.

This dependable Quality Fire Hose is now available for all Fire Departments. Quaker's modern municipal Fire Hose with Easy-Fold Construction permits a much "Closer Bend" when packed in the truck bed.

Whether you need 50 feet or 50,000 feet Quaker is ready to serve you promptly.





Better check your fire hose today. Then let Quaker supply you with their Quality Fire Hose for as many feet as you need to give you adequate protection.

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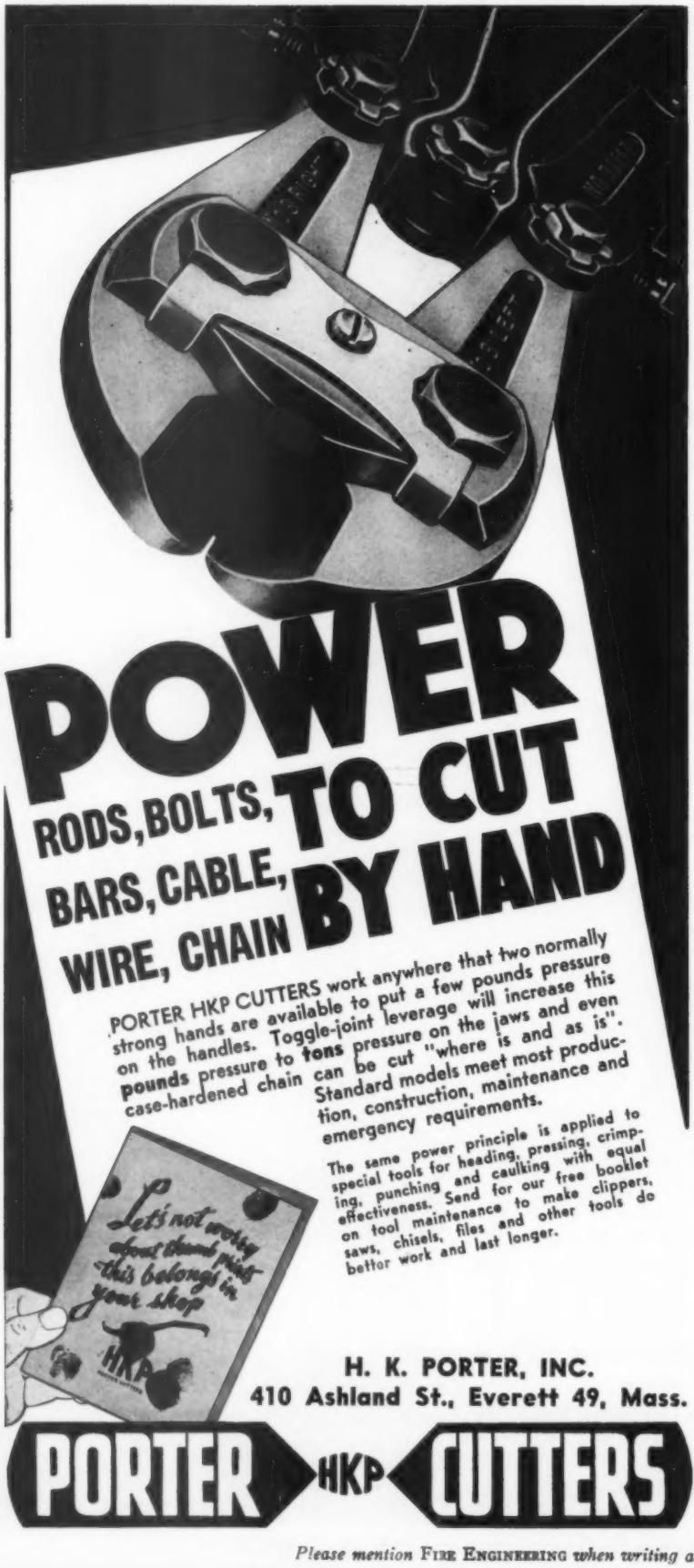
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RODS, BOLTS, BARS, CABLE, WIRE, CHAIN TO CUT BY HAND
PORTER HKP CUTTERS work anywhere that two normally strong hands are available to put a few pounds pressure on the handles. Toggle-joint leverage will increase this pounds pressure to tons pressure on the jaws and even case-hardened chain can be cut "where is and as is". Standard models meet most production, construction, maintenance and emergency requirements.
The same power principle is applied to special tools for heading, pressing, crimping, punching and caulking with equal effectiveness. Send for our free booklet on tool maintenance to make clippers, saws, chisels, files and other tools do better work and last longer.
Let's not worry about them! This belongs in your shop
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410 Ashland St., Everett 49, Mass.
PORTER HKP CUTTERS

Chief John M. Evans Dies

John Michael Evans, chief of the New Orleans Fire Department for a quarter of a century and a fire-fighter for the past 53 years, died October 15 at his home in New Orleans. He was 71 years old.

John M. Evans

The big, popular chief had been in ill health for some time; two months ago he was unable to return to his office at fire headquarters.

He was born in New Orleans August 18, 1874, the son of Michael Evans, a volunteer fire-fighter. His widow, the sole survivor, the former Mrs. Catherine O'Brien, was the daughter of another volunteer fireman.

At 18 he realized his youthful ambition to fight fire, when he joined the department (which by then had become a paid service) as ladderman with Truck Company No. 4. After a year as ladderman he was transferred to Engine Company No. 13, and made pipeman. In 1894 he was promoted to lieutenant in that company and in 1896 was transferred to Company No. 2. In August, 1902, he was made lieutenant of Engine Company No. 5 and in 1902 promoted to captain and assigned to Engine Company No. 8.

On June 21, 1911, the fire-fighter was elevated to the post of assistant chief and on December 18, 1921 he became chief.

A few hours after donning his chief's uniform, a great fire broke out in the Indian Refining Company plant at which he distinguished himself.

Chief Evan's career was a busy one. During his business life he attended more than 10,000 fires. He was always on hand at serious blazes, whatever the weather.

As second vice-president, first vice-president and president of the International Association of Fire Chiefs, he labored for the inauguration of more modern fire fighting methods and better hours and more pay for the men.

The British Government invited Chief Evans to Belize, British Honduras, to help establish a modern fire department. He accepted the invitation and stayed in Belize to train native firemen.

He was an honorary member of the Massachusetts Fire Chiefs' Club; of the New England Fire Chiefs' Association; the New Jersey State Firemen's Asso-

A MESSAGE TO CUSTOMERS

by

MIDWESTERN MFG. COMPANY

Makers of

FIREMEN'S PROTECTIVE CLOTHING

BECAUSE wars, like fires, are fought outdoors in the worst possible weather we were called upon to furnish a great deal of protective clothing for the armed forces.

But we did take care of our regular customers...

Our service wasn't wonderful but we managed to keep firemen from going inadequately clothed.

Now—our service is getting better . . . not "tops" yet but improving as fast as the raw material situation will permit. We can fill your orders and within a few months we will be able to provide our old prewar standard clothing in unlimited quantities, and many outstanding improved types of garments.

Fire Chiefs all over the world

have had an opportunity in recent years to see Midwestern garments in use, and we are making connections now for export trade.

MIDWESTERN
PROTECTIVE
CLOTHING
MIDWESTERN MANUFACTURING CO.
MACKINAW, ILLINOIS

See your Midwestern Mfg. Co. representative for catalog and prices, or write the factory.

"Seize An Opportunity When It Is Offered"

Fire Equipment DEALERS WANTED

The equipment buying wave now sweeping the fire department field is bringing with it grand opportunities for live dealers. Manufacturers of everything from brass buttons to pumpers are eagerly seeking new sales agents and many are asking us to help them find good ones.

To assist in making it easier all around, we have decided to maintain a registry of fire department dealers who are interested in selling new lines, sales representatives who are looking for new connections, and any individuals who are planning to take up sales work in this field.

If you'd like us to put you on this list, send us your name and address, and a few facts about your set-up, experience, etc. Also mention the type products you now handle or want to handle. Then when anything of interest to you turns up we'll gladly let you know. Let's hear from you—***promptly.***

List Department, FIRE ENGINEERING
24 W. 40th Street, New York 18, N. Y.

★

"Small Opportunities Are Often The Beginning Of Great Enterprises"

ciation; the North Carolina Fire Chiefs' Association; the Dominion of Canada Fire Chiefs' Association and the Pacific Coast Association of Fire Chiefs. Also, he was an active member of the International Association of Fire Chiefs; the Louisiana State Firemen's Association; and the Southwestern Fire Chiefs' Association. He was a member of Lodge No. 30, Benevolent and Protective Order of Elks, the Knights of Columbus and the Firemen's Charitable Association.

One of the most widely known and respected members of the nation's fire service, Chief Evans will be mourned by many.

R. C. Stange Heads San Francisco Office of N. B. F. U.

W. E. Mallalieu, General Manager of the National Board of Fire Underwriters, has recently announced the appointment of Mr. Rudolph C. Stange as Assistant General Manager of the Board's San Francisco office.

Mr. Stange was designated by the Executive Committee at its January 25, 1945, meeting to succeed Mr. Charles H. Lum, who had headed the San Francisco office since its opening in 1921. However, it was not until mid-October that Mr. Stange could be released from full-time government assignments as Advisory Fire Protection Engineer to the United States Coast Guard.

Born in Orange, Mass., in 1898, Mr. Stange received his B. S. degree in Civil Engineering from Worcester Polytechnic Institute in 1920, subsequent to earning his officer's commission in World War I. His entire business career, following graduation, has been with the National Board of Fire Underwriters. Fifteen of these years between 1921 and 1940 have been spent on the Pacific Coast, operating from San Francisco headquarters.

Spectacular Boston 4-Alarm Fire

On Friday, October 5, at 4:55 P.M., a fire started in J. C. Keith's sales stable, located in a two-and-a-half story stucco building, with tile roof, just off Kenrick street, in the Brighton District of Boston, Mass. It was called the largest stable in New England, measuring about 200 by 45 feet. Thirty-six horses were burned to death and property loss was high.

The structure was a mass of flames when the fire department responded to box 5196. A delay in getting to work on the fire was aggravated by the fact that box 5193 which is located directly in front of the building was not pulled and, instead, box 5196 which is atop a high hill, some distance away, was sounded.

The first alarm brought Engines 51, 29 and 34, Ladders 11 and 14, and Acting District Chief McCarthy from District 11. He immediately ordered a second alarm (5:00 P.M.) which brought Engines 41, 37, 33, 10 and 28; Ladders 26 and 15 and District Chief 8, also Deputy Chief McDonald of the Second Division.

Before the arrival of additional help, blazing embers were showering down upon scores of wooden dwellings on Brecks Hill. With this threatening situation, Chief McCarthy ordered a third alarm at 5:05 P.M., calling Engines 3, 15, 23, 24, 32 and 13; upon Chief McDonough's arrival he sent a fourth alarm, at 5:20 P.M., to which Engines 53, 50,

INSEPARABLY LINKED *with* PROPER MAINTENANCE

PROTECTION ENGINEERS know from experience that the reliability of any protection system depends upon its supervision and maintenance. If either of these requirements is neglected *there can be no assurance that the system will be in condition to operate when an emergency arises.*

A.D.T. Protection Services are inseparably linked with proper maintenance. Behind every A.D.T. installation there is an organization of protection specialists which provides continuous supervision, periodic inspections and systematic tests and unceasingly maintains the protective signaling system in proper operating condition.

In more than 350 cities and towns in the United States where A.D.T. Central Station Protection is available, fire alarm, burglar alarm, watchman supervisory and sprinkler supervisory systems and other A.D.T.-maintained protective installations are connected to A.D.T. Central Stations for continuous supervision and the transmission of alarms to police and fire departments.

Outside of Central Station areas the same systems are installed to give visual or audible alarms on the premises and, if desired, are provided with direct-wire connections to fire fighting and police organizations. In these cases, too, A.D.T. inspects and maintains the protection equipment according to highest standards, thereby establishing maximum dependability.

Write to the nearest A.D.T. office or the A.D.T. Executive Offices, 155 Sixth Avenue, New York 13, N. Y., concerning your particular problem. We shall be glad to make recommendations and furnish complete information.

A. D. T. ELECTRIC PROTECTION SERVICES

Controlled Companies of **AMERICAN DISTRICT TELEGRAPH CO.** *155 Sixth Ave., New York 13, N. Y.*

CENTRAL STATIONS IN ALL PRINCIPAL CITIES OF THE UNITED STATES

A·D·T

Electric Protection Services

AGAINST FIRE · BURGLARY · HOLDUP

A NATION-WIDE ORGANIZATION

Barton Front Mounted

AMERICAN-MARSH PUMPS

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FIRE APPARATUS
CENTRIFUGAL PUMPS

FRONT MOUNTED FOR EASE OF OPERATION

AUTOMATIC VACUUM PRIMER

HIGH PRESSURE AT LOW ENGINE SPEED

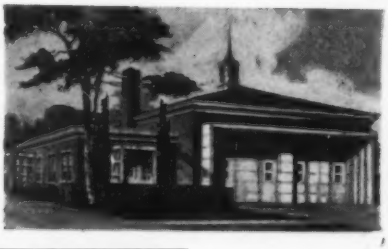
BOOSTER TANK OPERATION WITH TRUCK IN MOTION

Offered in capacities from 250 to 600 G.P.M.

AMERICAN-MARSH PUMPS, INC.

Battle Creek, Michigan, U. S. A.

Better
FIRE STATIONS
with
CIRCUL-AIR
THE AIR-CONDITIONING



FIRE HOSE DRYERS

It's "post-war" **now**, and you want your new stations to be of **Modern Design** . . . simpler, streamlined houses in keeping with the times . . . with better lighting, heating, adequate alarm systems, finer apparatus and **faster Hose Drying.**

In eliminating the costly, ugly hose tower of the "gay 90's" **CIRCUL-AIR** improves building appearance and lowers construction cost. Efficient and practical for large central stations, they are ideal for "bungalow" type houses, for villages, townships and fire districts where time-saving, space and costs are decisive factors.

for **OLD STATIONS** *too!*

Without adequate drying equipment, or with towers in need of repairs they are most economical and efficient. Cheaper than a tower, more compact than a drying rack, faster and easier to use than either.

ASK A CHIEF WHO HAS ONE

Or Write for Descriptive Booklet

The CIRCUL-*AIR* CORP.

6339 East Palmer Avenue
DETROIT 11 MICHIGAN

42, 35, and 39 and Ladder 30, with the Chief of District 12, responded.

All of the Engine Companies, with the exception of Nos. 51 and 35, were two-piece companies and their extra units, with hose and deck-pipes proved invaluable because of the scarcity of hydrants, and the long hose stretches necessitated —some over 1,200 feet. Engines 10, 24 and 50 draughted water from Chandler's Pond. Several companies were sent to protect exposures against other possible fires in the neighborhood. BEN ELLIS.

Many September Fires Keep California Firemen Busy

(*Continued from page* 834)

Northern California Does Not Escape

(1) Livestock was being moved out of the path of advancing flames from timber grass fires in many sections.

(2) At the Suisun-Fairfield air base all available equipment, augmented by all nearby fire departments finally extinguished a blaze that had threatened the base driven by a 30-mile wind.

The fire destroyed fourteen homes and barns at Elmira, in the back country between Vadaville and Dixon, burned walnut groves and endangered livestock in an area eight miles long and one and one-half miles wide. Elmira was saved by backfiring. Damage was estimated at $200,000. Over 200 head of sheep were lost on the Miller Ranch.

(3) A grass fire on Hunger's Hill between Cordelia and Vallejo was out of control early the evening of the 27th and fire companies from three cities were fighting to confine it after it had already burned over 2,000 acres.

(4) In the vicinity of Hale's Grove in Mendocino County, flames leaped over firebeaks to get out of control.

(5) Camp Beale troops, of Northern Sutter County, were called out to aid civilian fire-fighters.

(6) In Northern Calaveras County a 700-acre fire east of Mokelumne Hill was out of control. Folson prison inmates and reserves from a CYA camp and Preston School of Industry were called to help tired fire-fighters.

(7) Fire, which destroyed eleven Russian River homes on Fitch Mountain, near Healdsburg, was fanned out of control by a north wind for a second time the night of the 27th, threatening a score of other homes. This was one of eight fires in Sonoma County, most of them brush, which endangered several turkey farms.

September Fire Losses

Estimated fire losses in the United States in September were $32,447,000, a decrease of $1,649,000 or five per cent less than August losses which totalled $34,096,000, and $99,000 or three per cent higher than September, 1944, which totalled $31,448,000, it was announced by W. E. Mallalieu, General Manager of the National Board of Fire Under-

The Board's estimates are based on incurred losses reported by member companies, plus an allowance for uninsured and unreported losses.

Losses in the twelve months ended with September 30, 1945, are estimated at $448,702,000 as compared with $417,848,000 for the year ended September, 1944.

CUSTOM—
—BUILT

DESIGNED BY YOU AND BUILT
TO YOUR SPECIFICATIONS

OREN FIRE APPARATUS COMPANY

ARMY E NAVY

1201-9 West Salem Avenue

ROANOKE, VIRGINIA

WRITE FOR INFORMATION

STERLING MODEL "M"

GENERAL ALARM SIREN

You Can Depend On It *ALWAYS*

An absolutely dependable, tried and proven siren for communities of all sizes. Loud, clear, simple to instal and no maintenance to bother with. Embodying the "know how" of the oldest and largest makers of siren signals in the fire field. Write for descriptive literature and list of towns using the model "M".

ALSO
manufacturers of a complete line of apparatus sirens.
Write for literature.

STERLING SIREN FIRE ALARM CO., Inc.
55 Allen Street Rochester, New York

120 Years old — Still going Strong

That's experience that counts enormously when ordering fire-fighting products.

That plus studied attention to the smallest detail in design and manufacture makes for superior workmanship and is your guarantee of the best there is in fire fighting prerequisites.

After all, NOTHING TAKES THE PLACE OF EXPERIENCE.

SAMUEL EASTMAN COMPANY, INC.
CONCORD, N. H.

Classified Advertisements

Rates are inexpensive. "For Sale," "Proposal" and "Wanted" advertising. $5 per inch insertion (10% discount allowed for three or more consecutive insertions). FIRE ENGINEERING, *24 West 40th Street, New York 18, N. Y.*

ALL NEW SURPLUS WAR MATERIALS

Large Quantities of:
Tools, Hand and Electric
Hale Pumping Units, 40 and 500 G.P.M.
Rockwood Shut-Off Nozzles and Applicators
Akron Water Syphons (Jet Type)
Hose and Ladder Straps
Pyrene Foam Making Units
Foam Making Solution
Suction Hose—Fire Hose
Strainers—Adaptors—Connectors—Nozzles—Tips—Holders—Couplings
Door Openers, Claw Type
Also—Welding, Marine and Electrical Equipment
Inspection Invited—Offers Requested

The Greenport Basin and Construction Company
Greenport, Long Island, New York
Telephone — Greenport 88

WANTED

Fire Equipment Dealers to sell Morning Pride protected rubber firecoats, fire pants, fire mitts and fire suspenders.
Write today Morning Pride Mfg. Co., 1986 Home Ave., Dayton 7, Ohio.

CHIMNEY POWDER

No need to send men on the roof for chimney fires. Has-Mor Soot Destroyer not only puts the fire out, it continues to work until it cleans the chimney, making it unnecessary to go back to another chimney fire. Put up in handy packages. Agents wanted. Harry S. Morgan, 52 Broad St., Johnson City, N. Y.

AGENTS WANTED

Agents Wanted to Sell Fire Extinguishers and Fire Protection Equipment for Old Established Company. Good Proposition. SCHWARTZ BROS., Inc., 827 Arch Street, Philadelphia, Pa., Established Over Thirty-Eight Years.

POSITION WANTED

Fire Chief, twenty years' experience, large city and ordnance work, desires position as Chief. Available at once. 45 years of age. Will travel anywhere. Write Box 85, c/o FIRE ENGINEERING, 24 West 40th Street, New York 18, N. Y.

FOR SALE

One Stutz pumper, 1200 gals. In good shape. New tires, motor in mechanical good condition. Write Chief Roy Elliott for full particulars. Medford Fire Dept., Medford, Ohio.

WANTED

Back issues of Fire and Water Engineering between 1915 and 1930; whatever issues available.
Also old photographs or pictures of horse drawn and motorized fire apparatus.
Benedict J. Stevens, 146 Duke St., Kearny, N. J.

Hitch Your Airport Fire Fighting Program To This Star

The tremendous expansion of commercial aviation and private flying . . . with more and larger airports from coast to coast . . . adds up to one sure thing: *A new job for municipal fire departments and a new responsibility for fire chiefs.*

For your community will look to you and your department for complete know how and preparedness for whipping the appalling fires that can result from plane crashes.

Cardox Airport Fire Trucks . . . utilizing the principles that made this mighty fire fighter outstanding for its specialized wartime job . . . are now available in a unit engineered to the needs of civilian airfields.

Overwhelm Vicious Crash Fires With Amazing Speed

Self-contained . . . highly mobile . . . geared for easy maneuverability . . . the Cardox Airport Fire Truck packs the terrific wallop needed to knock out crash fires fast and make possible speedy rescue of plane personnel. *Tons* of liquid CO_2 can be released onto the fire zone in approximately one minute, if necessary. Backing up this big supply of zero-cold, fast-acting carbon dioxide are hundreds of gallons of foam solution . . . which blankets exposed gasoline and hot metal surfaces during and after extinguishment to prevent possible reignition.

Pictures shown at right, taken during demonstration of a Cardox Airport Fire Truck show three steps in total extinguishment of a vicious fire 30 seconds after extinguishment was begun.

In actual service on crash fires involving heavy bombers, frequently carrying thousands of gallons of aviation gasoline, this "mass attack" of a Cardox Airport Fire Truck has literally overwhelmed raging infernos . . . permitting rescue of personnel in *seconds* after the truck reached the scene of the crash.

New Bulletin Gives Full Facts

This bulletin presents interesting details on design, operation and performance records of Cardox Airport Fire Trucks. It will prove helpful to every fire chief faced with a problem of adequate fire protection for modern airports. Write today for Bulletin No. 19115.

CARDOX CORPORATION
BELL BUILDING • CHICAGO 1 • ILLINOIS
District Offices in New York • Washington • Detroit • Cleveland
Atlanta • Pittsburgh • San Francisco • Los Angeles • Seattle

CARDOX
CO_2 FIRE EXTINGUISHING SYSTEMS

THE NEW
LOW PRICED
WHEAT
Rechargeable Spotlight

MODEL
158

NOW AVAILABLE FROM STOCK—
ADAPTABLE TO ANY REDUCED
BUDGET

FEATURES

- Less expensive operation than dry cells.
- Free use of hands. Light carries conveniently on shoulder strap.
- Positive "Non-spill" construction.
- Light can be focused and directed as desired.
- Weighs only 92 ozs. complete.
- Simple to charge and water. No need to take lamp apart.
- Low price and operating cost make Wheat adaptable to any reduced budget.

2,500 FOOT BEAM
25,000 CANDLE POWER
1,000 HOURS OPERATION

KOEHLER MFG. CO.
MARLBORO, MASSACHUSETTS

Classified Advertisements

POSITION WANTED

As Fire Chief or Safety Supervisor in Industrial establishment. Sixteen years experience as Fire Department officer and Training Instructor. Four years experience as Fire Chief—large explosive plant. Degree—Engineering School in Vocational Supervision and Administration. Age, 42. Excellent references. Write Box 90, c/o FIRE ENGINEERING, 23 W. 40th St., New York 18, N. Y.

Munitions Pier Secret Revealed

During most of the war, New York and its fringe of cities have literally been sitting on a powder keg, a munitions shipping point a bare half-mile from the Statue of Liberty handling regularly more explosive material than was stored in the last war at Black Tom.

On August 1, the red warning flag was hauled down over the pier at Caven Point in lower Jersey City, when the little Polish freighter Staltowa Wola departed, Europe bound, with the last shipment of munitions to go from the terminal. Caven's commanding officer, Col. John U. Schiess, and fire forces of not a few municipalities, breathed sighs of relief.

More than 50 per cent of all the munitions shipped from the Atlantic Coast to Europe passed through the tightly guarded area without a single costly mishap.

As the freighter began her twentieth Atlantic voyage, all of them with munitions, Army authorities released data on Caven Point's history.

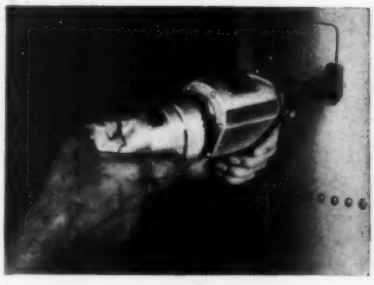
A total of 2,696,811 tons of bombs and ammunition, including the famous six ton blockbusters, was the terminal's record for the year. Eight ships could load at one time at the long pier. On several occasions there was on hand as much as 52,000 tons of explosives, enough to flatten a five-mile radius of the metropolitan area, if all went off at once. It would have caused structural damage for a distance of twenty miles, but it is said instantaneous detonation could hardly have occurred. Nevertheless, the Black Tom explosion of the last war would have been a mere firecracker compared with it.

Hazards at the terminal were reduced to a minimum. The working force of 1,000 Army personnel and 2,000 civilians was pledged to secrecy about details of operations. Workers were searched for matches and lighters at the gate. Heavy fines were imposed for violations. Several shipmasters, whose vessels lay at the pier, have paid the $200 fine imposed by Jersey City courts collaborating with Army security forces. This fine was for smoking. Fifty dollars was the fine for carrying matches.

All workers were carefully investigated by government agencies and trained experts watched all vessels coming in. Occasionally a scare threw the yard into action but there was not a single known attempt at sabotage and the only dangerous incident occurred when the freighter El Estero caught fire at the pier in April 1943, and was towed to safety and sunk in the bay before the flames reached the 1,400 tons of explosives.

On another occasion, when a ship suddenly started to emit clouds of smoke, the terminal's disaster schedule

THE NEW
SAW-GUN
SHOULD BE STANDARD
ON ALL
FIRE-FIGHTING EQUIPMENT



Here's Why..!

The Saw-Gun is a portable power-saw that will quickly cut into all metals, wood and other materials. Quickly attaches to any electric or air drill, and may also be propelled by a flexible shaft. Insert ordinary hack-saw blade for cutting.

Firemen equipped with this handy tool can now get at the fire quickly. Can cut openings into obstructions regardless of their material. Cuts rapidly through heavy gauge steel. No need to waste precious time removing steel gratings . . . cut them out of the way with this amazing portable tool. Does away with slow, cumbersome, dangerous gas cutting torches, together with their long lines of hose and heavy tanks.

Progressive fire-chiefs who know the importance of getting at a fire *fast*—who want a quicker means of getting to entrapped persons, will add the Saw-Gun as standard equipment.

ONLY
$42.00
QUICK SHIPMENTS
ON AA-5 PRIORITY
OR HIGHER

Sold on
Money-Back
Guarantee

SEE YOUR JOBBER or WRITE DIRECT
Mid-States
EQUIPMENT COMPANY
Saw-Gun Division
2419 S. MICHIGAN AVE., CHICAGO 16, ILL.

Those tanks contain isobutane. Yet any fire starting in and around those tanks would be put under control almost immediately . . . *using water to do it!*

This plant, like many others where inflammable liquids are handled, puts its reliance on water (hitherto not considered effective on oil fires), because it has learned that water *in WaterFOG form* is the safest, surest protection.

Should a fire break out, those tanks, as shown above, would instantly be covered by clouds of WaterFOG — tiny water particles much finer than spray, with tremendous heat-absorptive power. Enveloping the area, cooling the blaze, shutting off oxygen, the WaterFOG would quickly confine and control the fire until it burned out or the supply of isobutane was shut off.

FIGHTS MANY TYPES OF FIRES

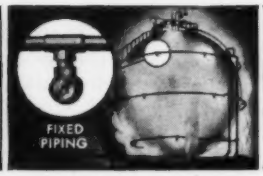
Rockwood-engineered systems of fixed piping are today protecting many types of equipment, processes and structures — transformers, paint shops, quench tanks, engine test cells. Portable WaterFOG equipment — nozzles and applicators to be attached to regular fire hose lines — is also available.

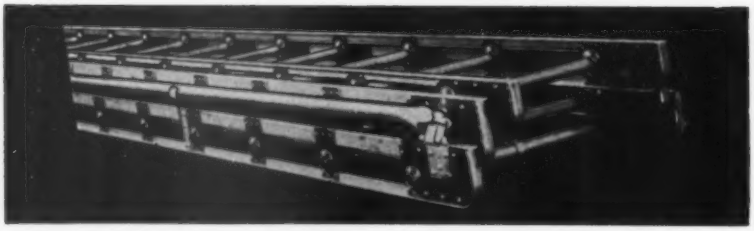
Rockwood WaterFOG is approved by Underwriters' Laboratories and Associated Factory Mutuals. Write for Bulletin 123. Business executives can arrange to have showings of colored movies (16 mm.) of Rockwood WaterFOG in action. Write:

ROCKWOOD SPRINKLER COMPANY
54 Harlow Street, Worcester 5, Mass.
Specialists in Fire Protection Engineering, Equipment and Installation since 1907

Water Engineered by Rockwood Cools, Confines, Smothers Oil Fires

ROCKWOOD WaterFOG





Again Available
STRONG-LIGHTWEIGHT
Aluminum Ladders

★ Reallocation of aluminum by the government permits the manufacture of a limited number of fire department and industrial ladders. The three section, aluminum, heavy duty extension ladder illustrated is type 3 EL. Its unusual strength combined with remarkable light weight makes it one of the most popular fire ladders ever designed. Because of these characteristics . . .

. . . a 65 foot ladder of this type can easily be raised by four men and a supervisor — an impossible feat with ladders not made of aluminum.

FOR GREATER SAFETY AND EASE OF HANDLING

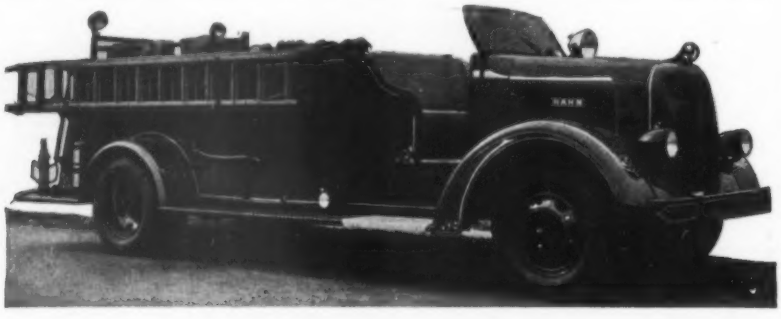
The locks operate automatically at any desired point during ladder extension. The rope and flexible cable are arranged for simultaneous automatic extension of both flies.

★ ★ ★

Write for information on standard sizes and aluminum ladders built to specifications

Aluminum Ladder Company

200 Carbis Street
Worthington, Pennsylvania



"HAHN" FIRE APPARATUS
SINCE 1907

FINEST IN THE WORLD ★ STREAMLINED ★ BALANCED CHASSIS ★ AMPLY POWERED ★ VERY EFFICIENT PUMPS WITH PLENTY IN RESERVE

HAHN MOTORS, Inc.
HAMBURG, PA.

went into effect. Sirens blasted warnings. The Jersey City Fire Department sent heavy complements of its equipment roaring down the city highways, converging on the danger spot. It turned out to be a smoke pot, accidentally set off. Again, the Jersey City firemen heaved a sigh of relief—at least those who were in the know about the terminal.

In the final ceremonies, Colonel Scheiss, Maj. Gen. Clarence H. Kells, commanding general of the New York Port of Embarkation, and a group of Jersey City officials paid tribute to the personnel at the pier. As the band played and 500 military policemen stood stiffly at attention the General cast off the last line and the ship began to move away. Thereafter, the $17,000,000 terminal reverted to the status of an ordinary Army cargo station.

What's Burning

THE following list includes fires of $10,000 loss and over in the United States and Canada, for the month of October, 1945.

Month Ending October 31

Portland, Ore.—Timber structures, prefabricators destroyed.
Springfield, Ill.—Capitol mine No. 57 of Peabody Coal Co. damaged. Spontaneous ignition in coal bins.
Los Angeles, Cal.—Plant of Davidson Mfg. Co. and brass foundry, destroyed.
Battle Creek, Mich.—Fifteen mercantile bldgs. in Stone Arcade, destroyed.
Saranac Lake, N. Y.—Whse. and refrigeration plt. of John Lapan & Sons, destroyed.
Kansas City, Mo.—McCray Coal Co. and A. E. Cummins Wholesale Lumber Co. destroyed.
Claremont, Va.—Buxtor Line steamers City of Norfolk and City of Richmond and wharf destroyed.
Bridgetown, N. S.—N. W. Graves fruit processing plt. damaged.
Pomona, Cal.—Benton Feed Mill damaged.
Winona, Minn.—Donovan Mfg. Co. plt. destroyed.
Glen Ullin, N. D.—Curlew elevator destroyed
Miami, Fla.—Packer Displays Bldg. damaged.
Auburn, Me.—Vacant Field Bros. and Gross shoe factory damaged.
Pocomoke City, Md.—Feed mill of Benjamin Dryden destroyed.
Minneapolis, Minn.—Freeman Mfg. Co. plant destroyed.
Corvallis, Ore.—Western Feed & Seed Co. destroyed. Spontaneous ignition.
Coeur D'Alene, Ida.—Coeur d'Alene civic center destroyed. Incendiary.
Fairfield, Ill.—Strand Theatre destroyed.
Philadelphia, Pa.—Plt. of Jones Machine Tool Works, Inc., damaged.
Houston, Tex.—Walgreen drug store damaged.
Hagerstown, Md.—Storage shed and whse. of Hagerstown Lumber Co. destroyed; Planing mill damaged.
Niagara Falls, N. Y.—Cataract House three-quarters destroyed.
Cleveland, Ohio—East Side gasoline and oil storage plant damaged.
Media, Pa.—Barn on estate of Walter M. Jeffords, about five miles west, Edgemont township, destroyed.
Sulphur Spring, Tex—Jackson Bros. wholesale grocery destroyed.
Vancouver, B. C.—Timber of Kapoor Lumber Co., in deep valley of Three Mile Creek, ten miles from Shawnigan Lake, destroyed.
Emundston, N. B.—Local arena of Adams Rodeo Show damaged.
Chicago, Ill.—Mess Hall at Great Lakes Naval Training Station damaged.
Rossville, Ill.—High school destroyed.
Chester, Pa.—Barn at Church Farm School, Glen Loch, northeast of West Chester, destroyed.
Emeryville, Cal.—Plt. of Oliver Tire & Rubber Co. damaged. Gas line tank explosion.
Aroma Park, Ill.—Seven bldgs. on Lowe Seed Co. farm destroyed. Defective hot air circulating system.
Ontario, N. Y.—T. H. Sheehan & Sons produce warehouse destroyed.

The TUFFITE FLASHLIGHT . . . Now Available!

The Tuffite Flashlight pictured above costs slightly more than the average flashlight . . . but ***lasts about five times as long.*** This built-in durability is the direct result of specialized design and construction. Tuffite Flashlights are non-conductive, waterproof, chip-proof, vapor-proof, can withstand pressures up to 38,000 pounds per square inch, and under test show heat resistance up to 360°F. when boiled in oil. Carefully gasketed at the lens and rear cap, with a rubber-sealed switch and no exposed metal parts, equipped with a fixed-focus parabolic reflector that throws an intense and dependable beam, this sturdy flashlight is ideally suited to the demanding work called for in the firefighting field.

During recent years, Tuffite Flashlight production has been largely diverted to our military and naval forces and key industries. Its performance record under the most rugged working conditions possible has been judged "extremely satisfactory."

Available in two types: ***Standard*** (F-80 Two-Cell and F-90 Three-Cell) and ***Permissible*** (F-81 Two-Cell and F-91 Three-Cell). The Permissible Model features a bulb-crushing spring which makes this model explosion-proof, and safe for use in hazardous vapor-laden areas. Both models use standard Type D dry cells.

SOME FACTS ABOUT TUFFITE ITSELF

Tuffite is a Phenolic Condensate compounded from mascerated canvas and subjected to tremendous thermosetting pressures. It has high insulating qualities, great mechanical strength. It is actually stronger than steel and almost as elastic as rubber.

Tuffite Flashlights offer certain very tangible advantages to progressive fire companies. They have a low maintenance cost, a very high safety factor, are rugged, dependable, throw a strong beam, are light in weight. Tuffite Flashlights make an ideal component for the standard equipment of all fire companies. For further data, write your jobber or this organization.

STEWART R. BROWNE
MANUFACTURING COMPANY INCORPORATED
258 BROADWAY, NEW YORK 7, N. Y.

A ROARING OIL FIRE ➡

⬅ K.O.'D by DUGAS in 37 Seconds

● In a test conducted for the observation of Underwriters' Laboratories and Factory Mutual Laboratories, 500 gallons of 300 degree F. flash point paraffin oil were "touched off."

This "transil oil" fire was large (20 ft. x 20 ft. area). After burning for 2 minutes, a DUGAS 150-A Wheeled Extinguisher equipped with the *new dual-stream nozzle* was brought into action.

In a mere 37 seconds, the inferno was extinguished.

New Nozzle Steps Up Effectiveness

NEW DUAL-STREAM NOZZLE deals effectively with spill fires and fires difficult to reach because of height or obstructions. Designed for use with DUGAS Wheeled Extinguishers, the new Dual-Stream Nozzle greatly increases fire-fighting range and effectiveness. A turn of the handle gives a *straight* stream with a range of 45 feet—or a *fan* stream with a range of 15 feet.

Quick Facts About Dugas Dry Chemical

1. For extra-hazardous fires involving flammable gases, liquids, greases or electrical equipment.
2. Not an electrical conductor.
3. Non-toxic, non-corrosive, non-abrasive.
4. Not affected by extreme cold or heat.

Write today for complete information regarding DUGAS Wheeled Extinguishers with the new Dual-Stream Nozzle . . . and DUGAS Hand Extinguishers.

duGas

Approved by Underwriters' Laboratories, Factory Mutual Laboratories.

Dugas 150-A Wheeled Extinguisher

ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN
DUGAS DIVISION

JANESVILLE QUALITY TURN OUT CLOTHING

Our turnout suits are giving excellent satisfaction in most of the large fire departments throughout the U. S. and **THERE MUST BE A REASON WHY SO MANY FIREMEN INSIST ON JANESVILLE QUALITY**

NOW AVAILABLE!
We can now supply old type ¾ Felt-lined Firemen's Boots.

JANESVILLE APPAREL CO.
JANESVILLE, WIS.

"ALL AMERICAN CHOICE"

INVINCIBLE NOZZLES

PORTABLE EQUIPMENT IS THE WATCHWORD TODAY

PREPARE—PROTECT
BUY
INVINCIBLE NOZZLES

and enjoy the benefits derived by experience of pioneers in the nozzle field.

F. N. McINTIRE BRASS WORKS
Successors to A. J. Morse & Son, Inc.
BOSTON, MASS.
1837 — 1945

Enid, Okla.—H. E. Leonhardt Lumber Co. destroyed.

Laredo, Tex.—Three storage tanks, three trucks and office of Anchor Petroleum Co. destroyed. Spark from motor ignited tanks.

Bonanza, Utah.—Barber Asphalt Corp. gilsonite mine destroyed. Also several houses damaged.

Miami, Fla.—Seventeen aircraft at Brown's Airport, 12 miles south, destroyed.

Haverhill, Mass.—Terminal of Wing's Express, damaged. Gasoline tank of loaded truck exploded.

Bayport, Minn.—Factory and lumber yard of St. Croix Mfg. Co., which is subsidiary of U. S. Bedding Co., destroyed.

Bennettsvile, S. C.—Two cotton houses, two seed houses and a delinting house at Centennial Ginnery destroyed. Sparks from freight engine.

Roseburg, Ore.—A. F. Saar pencil stock factory destroyed.

North Sydney, N. S.—Owl Drug Store, Shebib Shoe Repair Store, Earl's Tea Room, Keagan's Barber Shop, Lamadine's Stores and Rivoli Theatre destroyed.

Chicago, Ill.—Cooper Jr. Co., Government machinery reconditioners damaged.

Saratoga Springs, N. Y.—Saratoga Ice Co. plant destroyed.

Carnegie, Pa. — Industrial plt., occupied by Weimer Craft Corp. and Breeze Corp., destroyed. Explosion.

Tulsa, Okla.—Laboratory of Geophysical Research Corp. destroyed.

Mimico, Ont.—Mimico Reformatory barn and contents damaged.

Pittsburgh, Pa.—Downtown Service Co. and Anchor Tire and Battery Co. destroyed.

Greenville, S. C.—North Georgia Warehouse Corp. bldg. and approximately 6,000 bales of cotton destroyed.

Alma, Mich.—Pulp drier bldg. and adj. whse. of Michigan Sugar Co.'s local plt. destroyed.

Flint, Mich.—Plt. No. 4 of AC Spark Plug Div., Genl. Motors Corp., damaged.

Columbia, Mo.—Mill of Missouri Farmers Assn. destroyed. Lightning.

Portland, Ore.—Portland Yacht Club destroyed. Overheated stove.

Humboldt, Tenn.—Lumber shed of Lashlee-Rich Lumber Co., destroyed. Spontaneous ignition.

St. John, N. B.—Plant of Wilson Boxes, Ltd., Fairville, damaged.

Sherbrooke, Que.—Pulpwood at plant of Brompton Pulp & Paper Co., East Angus, damaged.

Littleton, Mass.—Dairy barn on Dell Dale Farm, near Acton line, destroyed.

Baltimore, Md.—Bowling alley occupying two-thirds block in business section, destroyed.

Port Alberni, B. C.—Corfield's garage, Alberni's Bicycle Shop, Comfort Shoe Store, McNiff's Men's Wear, Bank of Montreal and upstairs apartments, damaged.

Los Angeles, Cal.—Bldg. occupied by five business firms; forty automobiles in yards of one company and several other business establishments, in industrial district destroyed.

Bayport, Wis.—Plant and lumber storage yards of St. Croix Mfg. Co. destroyed. Explosion in paint shop.

Los Angeles, Cal.—California Frame Axle Co.; Atkins & McCarley Auto Service; Colyear's Motor Sales Co.; Chanalor & Lyons Co.; Genl. Auto Wrecking Co.; J. H. Bender Equipment Co.; Malabar Cafe, between Huntington Park and Maywood, damaged.

Tacoma, Wash.—Craig Furniture Co., Race Jewelery Store, Phillips Shoe Co., damaged.

Florin, Cal.—Bldg. owned by W. I. Steerman, housing boats, damaged.

Santa Cruz, Cal.—A. R. Wood electric brooder manufacturing plant, destroyed.

Lansing, Mich. — Lansing Recreation Center bowling alleys and billiard parlors, destroyed; Lansing Supply Co. damaged.

Concord, N. C.—Elird's Department Store damaged.

Altus, Okla.—Traders Eight Section Cotton Compress, including 5,000 bales cotton destroyed.

Cleveland, Ohio—Scranton Truck Body & Equipment Co. destroyed.

Gold Beach, Ore.—Gold Beach Co-operative Power Plant destroyed.

Forty Fort, Pa.—Warehouse occupied by General Motors Parts Division, Karns Transfer Garage and warehouse, and several other firms, destroyed.

Palm Springs, Cal.—The Dunes, swank night club, destroyed.

Passaic, N. J.—Tenement house destroyed. Oil stove explosion.

Spokane, Wash.—Warehouse of J. L. Gillespie & Son Packing Co., destroyed.

Kansas City, Mo.—Warehouse occupied by Kansas City Pump Co. damaged.

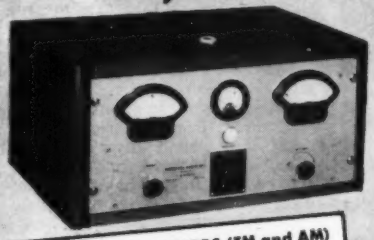
Syracuse, N. Y.—Bldg. occupied by Savoy Restaurant and Josef's Hair Stylist (a beauty parlor), destroyed.

Muskegon, Mich.—Loraine Hotel damaged.

Pink Hill, N. C.—General merchandise store of T. A. Turner and adj. bldg. of W. H. Jones destroyed.

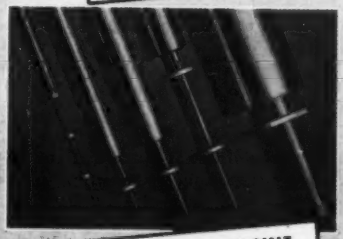
Complete Matched FM and AM RADIO COMMUNICATION EQUIPMENT

Engineered and Built by Doolittle



FREQUENCY MONITORS (FM and AM)
Direct reading. No charts or complicated calculations necessary. Models available for 110 Volt A.C. or battery operated portable use. Meet FCC requirements.

MOBILE EQUIPMENT (FM and AM)
Models up to 60 watts output. Crystal controlled. Complete with Transmitter, Receiver, Power Supply and all Accessories.



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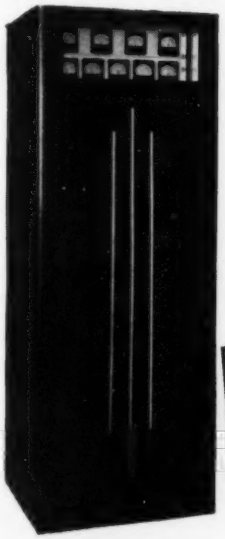

With such equipment in your service . . . many benefits are yours today . . . and will still be yours years from now!

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CENTRAL FIRE TRUCK CORPORATION
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"Everything for Fire Fighting"

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933, OF FIRE ENGINEERING, published Monthly at New York, N. Y., for Oct. 1, 1945.

State of New York } ss.:
County of New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared I. H. Case, who, having been duly sworn according to law, deposes and says that he is the business manager of the FIRE ENGINEERING and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Case-Shepperd-Mann Publishing Corp., 24 West 40th St., New York 18, N. Y.; Editor, Fred Shepperd, 24 West 40th St., New York 18, N. Y.; Managing Editor, Fred Shepperd, 24 West 40th St., New York 18, N. Y.; Business Manager, I. H. Case, 24 West 40th St., New York 18, N. Y.

2. That the owner is: Case-Shepperd-Mann Publishing Corp., 24 West 40th St., New York 18, N. Y.; I. H. Case, 24 West 40th St., New York 18, N. Y.; Fred Shepperd, 24 West 40th St., New York 18, N. Y.; Karl M. Mann, 24 West 40th St., New York 18, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

I. H. CASE,
Business Manager.

Sworn to and subscribed before me this 25th day of September, 1495.
[Seal]

WILLIAM H. TOPHAM,
Notary Public.

(My commission expires March 30, 1947.)

Pier Fire Tests

(*Continued from page* 837)

any comprehensive comparisons are to be reached between the effectiveness of the several methods of extinguishment employed.

Although the tests were inconclusive, they did illustrate these facts:

(1) There is a difference in the use of water fog when applied to *open* structures, *out-of-doors*, and where used in *confined spaces*, as would be the case in an *enclosed* pier structure.

(2) There is a place for each of the methods employed, i.e.: use of straight streams, distributors and fog, in fighting pier fires of all types. The effectiveness of each will depend upon the technique employed, as well as the appliances used.

(3) The picture might have been different had parts of the substructure been creosoted, or thoroughly coated with oil, as is characteristic of piers in other parts of the Port. It was noticed that the hotter the fire when the fog hit it, the more complete and quick the extinguishment.

(4) The tests indicated there are certain limitations to the range and volume of fog streams when used on open pier structures, even where weather conditions were most favorable. Had there been higher wind and rougher water the results might have been even less conclusive.

(5) The type of fireboat used (jet propulsion) was unsuited for the tests in question, but in view of the fact that it was the only means available for operating turret fog nozzles, and the fact that the crewmen were totally new to their use, it is considered that an excellent job was done by the Coast Guard.

(6) The use of fog applicators, with low velocity and high velocity heads might have proved interesting. It is reported that later, during overhaul operations, the Coast Guard used applicators with splendid success to kill understructure fires.

(7) It is problematical what two fireboats would have accomplished, each using a 500 GPM fog nozzle, one attacking from *leeward*. In an actual fire this two-way attack would have been the procedure, if boats, or rafts or punts were available.

(8) The test indicated definite air currents are produced by these large type fog nozzles operating at 100 PSI or over, which apparently carry beyond the limit of reach of the water-fog pattern. Although this might not be so serious in fighting enclosed fires, where proper ventilation is accomplished, the test indicates that these possible air drafts may stimulate the fire beyond the reach of the water fog particles. Care should be taken to anticipate this.

Newark Fire Losses Increasing

Fire losses in Newark, N. J., have been steadily increasing for the past three years, according to a report issued in October by the Bureau of Combustibles of the Newark Fire Department.

The report discloses the fact that losses totaled $1,057,858.98 in 1943, $1,343,324.08 last year, and $1,611,147.43 up to October 1 of this year.

...Reflect more than 60 Years of Research & Engineering

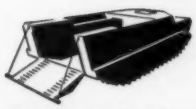
The revolutionary technique of fighting fires with high-pressure fog is an original development of Food Machinery Corporation research and engineering. It is a result of more than 60 years experience in pioneering *better* high pressure pumps and other equipment.

High pressure, plus the ability to carry water right to the fire and get into action *instantly,* have made FMC Original Fog Fire Fighters amazingly successful in combatting difficult forest fires. This equipment is now standard with many government, rural, and municipal fire fighting organizations. It has proved itself on *all* types of fires.

Developing 800 pounds pressure at the pump, 600 pounds at the nozzle, the FMC Original Fog Fire Fighter *atomizes* water. Blasted into the flame at high velocity, this vapor-like water fog quickly cools and smothers the fire. There is little or no water damage to property because the fog is completely used up.

FMC Original Fog Fire Fighters are made by FMC's John Bean Mfg. Co. Division, Lansing, Michigan, and Bean-Cutler Division, San Jose, California.

Other Products of FMC Research and Engineering



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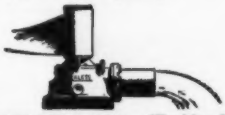

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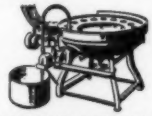

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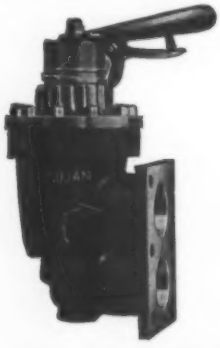
demand these rugged, modern relief valves. Their simplicity and responsive dependability make them a must. Made in sizes from 1 inch to 2½ inches with capacities up to 1600 g.p.m. and pressures up to 750 lbs. Write for descriptive literature describing the complete line of



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Trailer pumpers require valves made especially for this type of work, such a valve is the ROSS Trailer Pump Relief Valve. Made in sizes from 1 inch to 2½ inches with pressure adjustments from 10 lbs. to 750 lbs. and capacities from 0 to 500 g.p.m. at 120 lbs. pressure.

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Friction Loss in Parallel Lines

To the Editor:

How would you determine the friction loss in any single line of hose if three lines of 2½-inch hose were being operated from a 750 gallon pumper from either hydrant or draft. The three lines will not be siamesed into a single line, but all three lines will be hooked directly to three separate discharge gates attached to the pumper, supplying three 1-inch tips.

O. H. S.

Answer: Before the friction loss in a hose line can be determined, we must know the hose diameter, the length of line, the nozzle diameter, and the engine, or the nozzle pressure.

If each of the lines is identical as to diameter, length, and nozzle diameter, the friction loss in each will be the same, provided the flow of water into all lines is free and not throttled by discharge valve.

Each line must be solved as a separate problem unless the factors given above are the same for each line. In this latter case, friction loss in each line will be identical as previously noted.

To solve for friction loss in any line of hose, we must first find the nozzle pressure (if it is not given) and then the flow of water through the line.

Once the flow has been determined, then the friction loss is found by the following formula:

F. L. (100 feet of ½-inch hose) = 2 x Q x Q + Q, where Q is the flow measured in hundreds of gallons per minute. Thus if the flow were 230 gallons per minute, Q would be 2.3.

The above formula applies only to 2½-inch hose. To find the friction loss in other than 2½-inch hose, the hose must be first converted to 2½-inch by use of the proper conversion factor.

Operating Pump at Vacuum

To the Editor:

Can a pumper draw a greater volume of water from a plug than the plug itself will produce without the engine? For instance, a plug with 1-pound pressure at the four-inch outlet will produce 430 gallons per minute. Can a pump of a larger capacity than that be hooked up to the plug and produce a larger volume of water? I have been told that it could be done, but if so, wouldn't that endanger the mains.

W. E. S.

Answer: A pumper can draw a little more water from a hydrant than the hydrant will produce by itself.

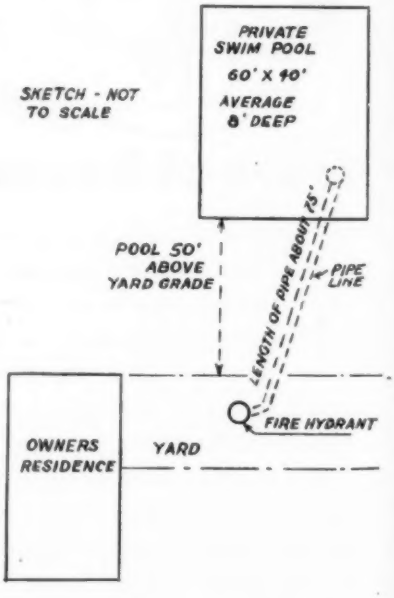
For a definite hydrant outlet pressure, you will get a certain definite discharge. If a pumper is attached to this hydrant, it can create a partial vacuum at the hydrant outlet, and thus aid in increasing the discharge from the hydrant. But operating a pump at vacuum on a hydrant is not good practice, even though damage to main or hydrant is very improbable.

Improvised Fire Protection System

To the Editor:

We are building a swimming pool out in the country. Fire protection for the house is three miles away.

Our thought then is to connect a certain size pipe to a standard fire hydrant in the yard where one or two lengths of hose will be connected so that the owner can have the use of the water as a protection to his house if need be, or even to water his lawn.



What size pipe should be used to get some pressure at the nozzle, and what range would the pressure give the stream at the nozzle?

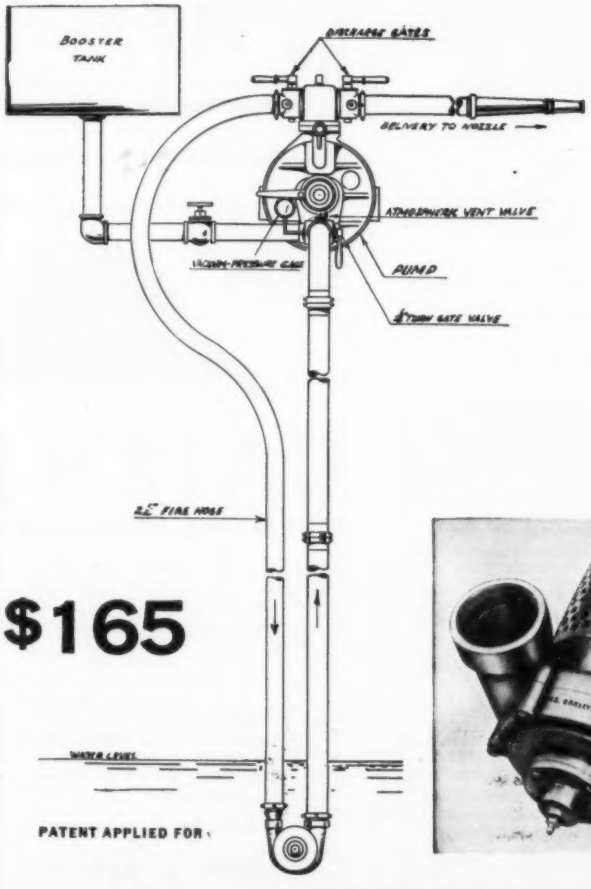
J. F.

Answer: A 50-foot head of water is not sufficient to give a satisfactory fire stream, as it will produce but 21.7 pounds pressure. Nozzle pressures of under 30 pounds are considered entirely unsatisfactory for fire fighting.

However, on the basis of a maximum elevation of 50 feet of water above the hydrant, we have made certain calcula-

LIFTS WATER 100 FEET

208 GALLONS PER MINUTE!
73 FEET ABOVE and 165 FEET
DISTANT FROM THE RIVER!



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One of the greatest steps forward in fire fighting since the advent of motorized apparatus.

Makes use of inaccessible water supplies such as hard to get at lakes, streams, ponds, either beyond vertical lift of pumps (20 ft. average lifting capacity) or beyond horizontal reach of roads.

Will lift water vertically in excess of 100 feet and horizontally from a distance hundreds of feet away. Sounds fantastic but the sensational performance of the Hi-Lift Suction Booster has been proved over and over by exhaustive tests.

The actual photograph at the left shows a Hi-Lift in action with a Champion 500 Gallon Pumper, that carries a 200 gallon water tank, charging the Unit (from the tank supply) with 150 lb. pressure and 152 gallon input and the Hi-Lift is lifting 208 gallons per minute for fire fighting. This performance with truck 73 feet above and 165 feet away from the river.

208 gallons of water per minute for fire fighting from an unlimited supply otherwise inaccessible to the largest and most expensive pumper ever built.

Thousands of Fire Departments have large, inexhaustible yet inaccessible water supplies available that from now on may be put to good use with a Champion Hi-Lift.

You can use the Champion Hi-Lift Suction Booster with any make of fire truck having a booster tank of 50 gallon capacity or more.

A 200 gallon tank is inadequate for charging the Hi-Lift Booster through 250 feet of 2½-inch fire hose as in the illustration above where the truck is 73 feet above and 165 feet away from the water.

The booster tank automatically refills and is shut off immediately after the Booster is placed in operation.

Complete with easy instructions and performance data so that you can make your own 30 DAY FREE TRIAL TEST and prove to yourself that the Hi-Lift Suction Booster is a good investment in fire fighting efficiency.

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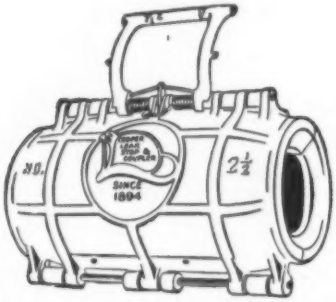

In use by fire departments since 1894. It is the original leak stop and Universal Coupler. "Look for the Helmet."

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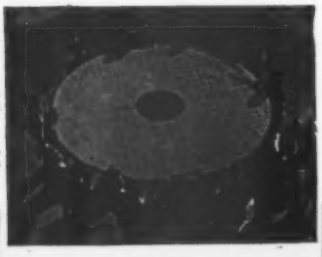

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tions which may be of interest, if not of particular value, to you.

Using a ½-inch nozzle at 20 pounds nozzle pressure, we get a discharge of 33.2 gallons per minute.

The friction loss in 100 feet of 6-inch main at 33.2 gallons per minute is 0.01 pounds, which is negligible.

But you have the friction loss in the hose which must be deducted from the nozzle pressure. If a 100-foot stretch of hose were employed, the friction loss in the hose would be approximately 5 pounds, giving a nozzle pressure of 16.7 pounds.

This pressure would be quite ineffective.

Effective reach of stream, in feet, is approximately 1½ x N. P. (N.P. = nozzle pressure in lbs. per sq. in.).

Combined Hose Layout

To the Editor:

Referring to the hydraulic problem on pages 710 and 711 in the September issue, when this problem was given to me to work out, I applied the formula for engine pressure as follows: $E.P. = N.P. \times (1.1 + KL)$.

I converted the two 1½-inch lines to one 2½-inch by dividing by .3, giving me a line $500 + 600 = 1100$ feet of 2½-inch hose.

Then working by formula, I get:

$$E.P. = 50 \times (1.1 + KL)$$
$$K = .042$$
$$L = 22$$

Therefore

$$E.P. = 50 \times (1.1 + .042 \times 22)$$
$$= 50 \times (1.1 + .984)$$
$$= 50 \times 2.024$$
$$= 101.2 \text{ pounds}$$

Please tell me if .3 is the conversion factor for converting two 1½-inch lines to one 2½-inch line, and also if the problem can be solved in this manner. H. C. J.

Answer: Your method of solution is not correct, because you do not use the proper factor for reducing two parallel lines of 1½-inch hose to a single line of 2½-inch.

This can be done in two steps: First reduce each 1½-inch line to a single line of 2½-inch by dividing by the factor .074. The next step would be then to combine the two 2½-inch lines into a single line of 2½-inch hose by dividing by the factor 3.6.

Or both operations can be performed at one time by dividing by the factor .2664, which is the factor for reducing two parallel 1½-inch lines of hose to a single line of 2½-inch hose.

In the problem given, we have two parallel 150-foot lines of 1½-inch hose.

Combining these into a single line of 2½-inch hose, by dividing by the factor .2664, we get the equivalent length of 2½-inch hose, single line, which is 563 feet.

Add this to the 600-foot line of 2½-inch hose given in the problem, and we have a total stretch of 1,163 feet of hose.

The next step is to combine the two ¾-inch nozzles into a single nozzle. This is done in the problem as given in the September issue, and the size of

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nozzle equivalent to the two ¾-inch nozzles is 1-1/16-inch.

Then solve for engine pressure.

E. P. = N. P. × (1.1 + KL).

Nozzle pressure is 50 pounds, as given in the problem.

K for a 1-1/16-inch nozzle on 2½-inch hose is .1274.

L, the number of 50-foot sections of hose in the stretch, is equal to 1163 ÷ 50, or 23.26.

Then E. P. = 50 × (1.1+ .1274 × 23.26)
= 50 × (1.1+ 2.96)
= 50 × 4.06
= 203 pounds, which tallies quite closely with the solution given in the September issue.

The Round Table

(*Continued from page* 849)

similar, would be of great value to a truck that is used primarily for rural and brush fires. The fact that it is often impossible to get very near the source of water supply, offers a real problem. I believe a rural truck should not be expected to carry any more than several hundred gallons of water, a supply of light hose and a pump of approximately 300 gallons per minute. Of course, road conditions should enter into the size of the truck. However, when we think of rural apparatus, we generally think of some kind of equipment that is not too heavy and bulky, yet is capable of doing a good job.

A. F. Boyer, Chief, Slatington, Pa.: For rural fires, a booster tank should hold 500 gallons of water. Five per cent of our brush fires and ten per cent of the rural fires are controlled with booster lines supplied only by water from the booster tank.

The tank is replenished by buckets or gasoline pumper at nearest water supply.

Pressure sprayers, such as those used on farms, holding three to five hundred gallons of water, which can be drawn by tractor or truck to fires would be desirable in fighting such fires. Most fires gain too much headway before the apparatus gets there.

George Singer, Chief, Marysville, Ohio: I feel that a 500-gallon tank would be all that was required on booster apparatus.

In our community all brush and rural fires are controlled with booster line or back pack pumps of 5-gallon capacity.

In all cases where we have had to replenish our water in the booster pump, we have had to use a bucket brigade. We are now organized in the different townships with one man at the head of each township whose duty it is to see that we get the water in any way he sees fit.

I believe it is desirable to include a 500-gallon booster tank, and four or five back pumps on rural apparatus. The main object is getting water to the fire and having someone who feels it is not only his duty but his job to see that we get the water.

R. W. Schwarzkopf, Chief, Westerville, Ohio: We have an eighty gallon booster tank but believe we should have no less than a 150-gallon.

Practically none of our rural or brush fires is controlled by booster

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Now—because of the Government's prohibition of the use of nickel, brass, copper, nickel plating, and chromium—we are making these badges and insignia in sterling silver, sterling silver gold plated, rolled gold on sterling silver and 14 karat gold.

Today—for just a little more, you get a sterling silver Braxmar Badge—without doubt the best badge you can buy anywhere.

The blue covered catalog is the latest published but write for our new price list, effective July 29, 1943. Only prices in the catalog on 14 karat gold items are still in effect. A special Fire Dept. circular is now in preparation. Watch for your copy.

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When you specify products bearing the TRUMPET trademark, you can SAVE and BANK on SAFETY.

THIS DISCUSSION WILL BE CONTINUED

Due to the large number of Chiefs who contributed their experiences, the discussion on this subject will be continued in the next issue.

only, but the booster equipment is used in practically all cases. The booster tank is used for hand pump refilling where the truck cannot get into the area. The tank is replenished by suction from cisterns or creeks or by buckets.

I believe a small motor driven portable pump that has a good suction arrangement and is able to relay to the truck pump is desirable on such apparatus.

John Armstrong, Chief, Marseilles, Ill.: Two hundred gallons should be sufficient for brush or grass fires within city limits. If only one piece of equipment is making a rural run, I believe 300 gallons maximum would be necessary.

We have made ten runs to brush fires within city limits and no fire took over 100 gallons of water. We make no rural runs.

We carry six 10-quart pails and would have a bucket brigade refill the booster tank if needed.

I believe that any equipment used for rural runs should be separate equipment and used only for that purpose.

Mack Paul, Acting Chief, Woodville, Pa.: Apparatus should have a booster tank capacity of 300 gallons for both brush and rural fires. About fifty per cent of our brush and rural fires are controlled by booster lines.

Our tanks are replenished by cisterns, creek, or if necessary by returning to the nearest fire hydrant.

I believe fog nozzles are desirable as a piece of equipment on rural fire apparatus.

A. Doeinck, Chief, Liberty, N. Y.: I believe booster tanks should have a capacity of at least 200 gallons and more, if practical, for both rural and brush fires. All brush fires and approximately fifty per cent of our rural fires are controlled with booster lines.

Trucks carry six 12-gallon pails to fill booster when necessary. If we are near a source of supply, we use 2½-inch hose from pump to thief on nozzle, and booster line.

I believe an auxiliary portable pump and 1½-inch hose to feed booster tank are desirable where equipment is used especially for this type of fire.

J. C. Burrhus, Chief, Walton, N. Y.: I believe booster tank should have a capacity of from three to five hundred gallons.

About ninety per cent of brush fires and fifty per cent of our rural fires are controlled by booster lines.

Tank is replenished by water drawn by farmers in milk cans.

We find 1½-inch hose very desirable, together with the booster lines. I believe a small portable pump would also be an asset.

The element of time is of first importance in the successful treatment of burns. If a burn is treated within 15 minutes after it occurs, the probability of blister formation is reduced to a minimum. But if time is wasted before proper treatment is started, serious complications and infection may follow.

When using Gebauer's TANNIC SPRAY in the treatment of burns, the factors involving time-loss are eliminated. This preparation is a stable solution of tannic acid ready for immediate use. Packaged in a sturdy amber bottle having an automatic dispensing cap, which permits the projection of the solution in the form of a fine jet stream. Upon application the solvent evaporates rapidly, covering the burn with an evenly applied, dry and flexible film of tannic acid.

Gebauer's TANNIC SPRAY is a practical *first* first-aid treatment for first, second, and small area third degree burns. Write for literature.

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Norman Comiskey, Chief, Waterloo, N. Y.: I am of the opinion that a booster tank should have a capacity of from 250 to 300 gallons. We control about sixty per cent of our rural and brush fires with booster lines. The tank is replenished from wells or creeks.

I believe the equipment on apparatus used for brush or rural fire fighting should include fog nozzles, pails, and an auxiliary pump to reach any water that may be available; in other words, a relay pump.

John N. Allen, Chief, Union Fire Company, Westville, N. J.: I believe the booster tank capacity should be as great as can be carried on the truck. Ninety per cent of our rural and brush fires are controlled with booster lines. A pump is used to replenish the water in the booster tank.

I believe these units should include a large tank holding 3,000 or more gallons of water with a 500 G.P.M. pump for boosting and drafting and a fitting made on side or bottom of tank so that in case of something happening to the pump, another pump can be hooked up to it.

D. R. Banton, Chief, Warsaw, N. Y.: I believe the capacity of a booster tank should be from 500 to 750 gallons. Thirty per cent of our rural and brush fires are controlled with booster lines.

When our booster tank needs replenishing, milk cans on squad cars are utilized.

I would like to see combination fog and straight stream nozzles included in the equipment of such a unit.

Paul Shiffer, Chief, Elizabethtown, Pa.: I believe the capacity of a booster tank on apparatus used for fighting rural and brush fires should be 200 gallons. We use booster equipment on 20 per cent of our brush fires and 100 per cent on our rural fires. When the tank needs replenishing we utilize streams, wells, cisterns, etc. If necessary, our local dairyman hauls water in milk cans.

I believe back pack pumps, shovels, fire brooms and portable pumps should be standard equipment on such units.

Thomas Turner, Chief, Ridley Park, Pa.: I am of the opinion that the booster tank capacity on apparatus used for brush and rural fires should be 500 gallons.

Ninety-five per cent of such fires are controlled by booster lines. At the present time we have no way of replenishing our booster tanks.

I believe a motor-driven pump should be included on this apparatus so that the booster tank can be refilled from streams or wells.

* * *

The following replies are in answer to a previous round table on choosing a chief for his experience:

S. J. Flores, Chief, Shreveport, La.: I believe the man who is acting chief and who has had the experience should be appointed chief. Civil service doesn't know anything about fighting fires.

Frank D. Shaw, Chief, Greensboro, N. C.: I believe the Board of Fire Commissioners are acting unwisely in this case. Experience and ability far outweigh the age limitations. A man should be appointed out of the ranks rather than from the rank and file of citizens.

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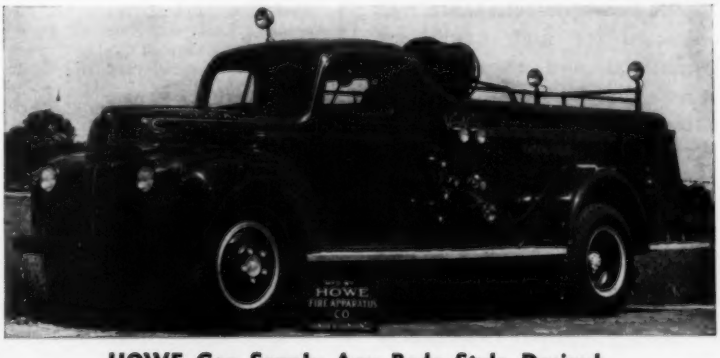

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Thomas R. Hartnett, Chief, Racine, Wis.: I believe the acting chief should be made chief. His experience and ability outweigh the age limitations.

Frank Pulaski, Chief, Boise, Ida.: I believe if the Board of Fire Commissioners have to hold an examination for the position of chief, they should open it to members of the fire department only from captains on up. They are acting very unwisely in barring the now acting chief because of age.

C. A. Delaney, Chief, Lakewood, Ohio: I firmly believe that the Board of Fire Commissioners are acting unwisely in applying the method by which they seek to select a permanent chief. By application of the age limit (fifty-five years) the Board displays lack of knowledge and understanding of the position and the duties and responsibilities of the fire chief.

They also show evidence of gross disregard for the safety of the community and absence of thought of the effect such action may have on the morale of the members of the department, particularly those members who aspire to advance within the organization.

Considering the ability which a man would naturally develop during the course of twenty-nine years experience in the fire service, and the fact that the individual in question has been advanced by civil service examinations through the intermediate ranks to the rank of assistant chief, I am convinced that in this instance experience and ability definitely outweigh the age limit.

Assuming that there is but one assistant chief in the department, I believe he should be subjected to a reasonable non-competitive examination on matters directly related to the duties of the office.

If there is but one assistant chief and the laws of the state or other regulations require the examination to be competitive, the examination should be open to members of the next lower rank.

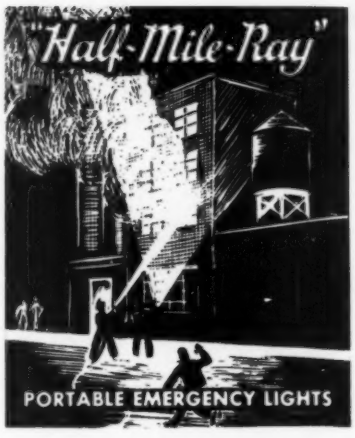
In my opinion, examinations for all positions should be limited to members of the department.

Extension of civil service to embrace the position of chief would appear to be the most equitable manner of arriving at a permanent solution.

William Meinheit, Chief, Berkeley, Cal.: I believe the Board of Fire Commissioners are acting very unwisely in this case. Most presidents, world diplomats, many generals, admirals, governors, mayors and even fire commissioners held office when they were over sixty years of age and made vital decisions that affected the welfare of those under them.

I believe ability and experience, provided mental and physical qualifications are also present, should outweigh age limitations.

There should be no need in an efficient fire department to go outside of the ranks to select an able and qualified executive administrative officer. I believe that it the assistant chief who now is acting chief is qualified to be the assistant chief, he should be given the opportunity to compete for the position of chief. If the acting chief is the outstanding fire officer you say he is, I'll put my chips on him for the chief's job.



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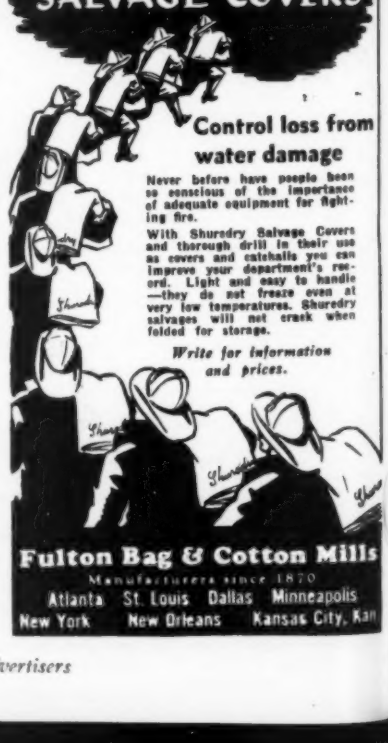

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Never before have people been so conscious of the importance of adequate equipment for fighting fire.

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Publications Received

"Your Fire Department," a businesslike, interesting and nicely printed bulletin published by the Madeira and Indian Hill Fire Company (we gather the address is Ohio, but the masthead fails to inform us), tells about the good work of the companies and plugs fire prevention week.

No. 32 of "Firefax," the informative and colorful house organ of the Pyrene Manufacturing Company, contains a wealth of helpful material on fire protection. It devotes a page to urging its official readers to join the International Association of Fire Chiefs.

"Safety," for October, contains an article by FIRE ENGINEERING's assistant Editor, Roi B. Woolley, on "Post War Fire Hazards." This is the official publication of the American Museum of Safety and the Greater New York Safety Council, 60 East 42nd Street, New York 17, N. Y.

"Annual Report of the Fire Department, Denver, Colo., for the year 1944." The last report signed by the late Chief John F. Healey. Well prepared, illustrated and printed.

"Your City Government," containing the summary of the City Organizations of Schenectady, N. Y., for the year 1944. This plastic bound, attractively prepared report includes a chapter on the fire department, Chief James J. Higgins. Losses for 1944 were nearly 50 per cent lower than for 1943.

Rockwood Sprinkler Company has prepared reprints of the article, "Twin Residential Fires Attest Value of Fog," which appeared in the September last issue of FIRE ENGINEERING. They may be had without charge, upon request.

An attractive souvenir booklet was published by the Phoenix Fire Engine and Hose Co. No. 2 of the Stroudsburg Fire Department, Stroudsburg, Penn., upon the occasion of the company's 100th Anniversary.

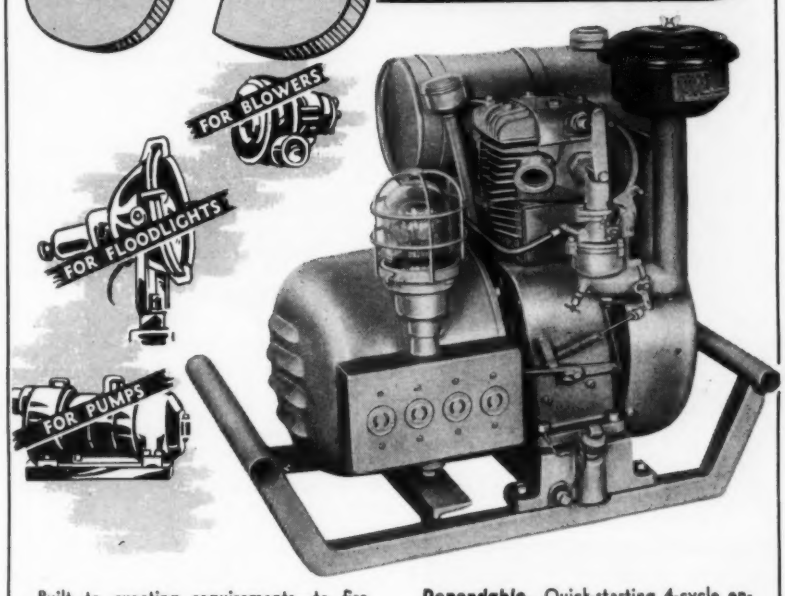
Besides an interesting history of the Company—the first fire-fighting organization in Monroe County—the booklet contains pictures of early apparatus, personnel and other data about the organization.

From Michael Shea, Chief of the Fire Department of the City of Fitchburg, Mass., comes the annual report of his department for the year 1944. There were seven less fires in 1944 than in 1943, but losses were $23,348.12 greater.

"Fire Prevention Through Chambers of Commerce" is the title of a colorful booklet of twenty-four pages published by the Chamber of Commerce of the United States, Washington, D. C. This is an excellent followup to Fire Prevention Week and should help sustain interest in fire prevention by encouraging Chambers of Commerce and collateral organizations to maintain their fire prevention activities. It contains a wealth of material for any person interested in this subject.

"The Bulletin," published in the interests of the firemen of the State of Illinois by the Illinois Firemen's Associa-

"US" ELECTRICITY WHEN You want it WHERE You want it



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Dependable. Quick-starting 4-cycle engine. Positive lubrication.

Start it and forget it! Automatic voltage regulation under all loads. No adjusting necessary. No fussing to mix gasoline and oil.

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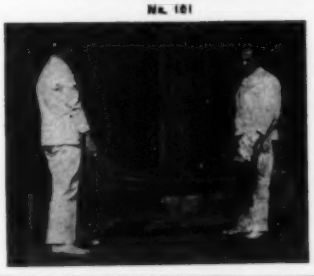

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Radio-Active Treated, Mildew-Proof . . . Rot-Proof . . . Freeze-Proof . . . and with FLEXLASTICS* for longer Service life. Every length Pressure-Tested and Flat-Folding for easier, safer handling.

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52nd YEAR

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A-B-C — 4 to 26 DIGIT FIRE ALARM TRANSMITTER

SOUTHERN SWITCH & SIGNAL CO.

SHREVEPORT, LA.

tion, maintains its standard of excellence. The October issue —No. 49— contains a pithy article, "How to Prevent Fires," by Fire Marshal John H. Craig.

It may not be generally known, but the hustling Oak Ridge, Tenn., Fire Department publishes a professional-like periodical: "The Fire Eliminator." The price, according to the masthead, is "Eternal Vigilance."

The current number features fire prevention, with emphasis on the work of Oak Ridge fire fighters. (Oak Ridge is the home of the atom bomb).

Forester Fire Protection Notes

Is the name of a periodical bulletin issued by Western Fire Equipment Company, 69 Main Street, San Francisco 5, Calif., which always contains meaty, helpful information for fire-fighters. It is published monthly and is now in its second year.

Other Publications

The editors acknowledge receipt of several other interesting and educational publications: "Sentinel" a new periodical, devoted to plant protection, published by the Factory Insurance Association, William R. Ford, Editor and Director of Information, 85 John Street, New York 7, N. Y. This eight-page, colorful booklet contains much of interest for fire-minded persons.

Another always-welcome bulletin is that published by the Division of Fire, Joseph A. Kirby, Chief and R. B. Kurfiss, Chief Inspector, Bureau of Fire Prevention. Communities that are seriously concerned with improving their industrial fire prevention conditions might well take a leaf from this well-written and edited compilation of fact and common-sense.

The Watch Desk

(*Continued from page* 852)

Locking Barn Doors

During the past ten years, it is said that residents of sections of what is known as the Heights area of Ridgewood, N. J., had asked for a firehouse somewhere on that site but, as is so often the case, there were many deterrents.

Located in this Heights area, lying west of the Erie Railroad and North of Glen Avenue, is the home—or was the home—of Mr. and Mrs. Alfred R. Gessingen, 435 Hillcrest Road.

On the night of Thursday, August 30, fire visited this home. When it was extinguished Paul and Joan Lee Gessinger, children of the family, were dead, despite the strenuous efforts of fire men to save their lives. Workmen of the village said that the Gessinger house had been painted the week before and attributed the swift mushrooming of the fire to the presence of inflammable paints and finishes throughout the stucco-exterior structure.

Complaint that firemen were tardy in arrival was disproved by the subsequent investigation. Meanwhile Commissioner William Rurode announced he would present plans for the construction of a firehouse for the heights.

Hartford Histrionics

The curt day-by-day fire reports in the public press often furnish news tidbits that make you wish you knew more about the fires in question. Here's one for the book culled from the columns of the Hartford, Conn., Courant of August 29 and contributed by eagleyed clipper, Horace B. Clark, of North Granby, Conn.:

5:51 p. m.—Still alarm. Fire in water trough of cattle pen at rear of 340 North Front Street. Cause undetermined. Slight damage. Property owner, New York, New Haven and Hartford Railroad Company No. 3.

We've heard tell of elevated water tanks burning, but this is the first record of a "fire in a **watering trough.**"

* * *

Burning Necessity

In Elizabeth, N. J., six workmen shoveled feverishly for three days to remove a mixture of rice anthracite and soft coal from the basement of the one-story power house of the Thomas Jefferson High School.

On the sixth day the pile of coal was eight feet high, an estimated forty tons, and everyone concerned was breathing easier.

John Brown, business manager of the Board of Education, explained that the coal, part of a supply of 150 tons in the bin, had become prematurely hot owing to packing and the only thing to do was to get it out before it set fire to the school.

Wonder of it is that the job wasn't wished on local firemen!

SAFELY...EASILY...ECONOMICALLY

This rugged 5-amp mercury Tungar is just the charger for fire departments with modern ideas about battery maintenance.

Overnight this Tungar will substantially charge a run down battery for a few cents. It's furnished with an a-c cord set and a special receptacle which can be attached to the steering post of any passenger car or fire truck. To charge a battery, you simply plug one lead into an a-c outlet and place the second lead into the steering post receptacle. There's no chance of over-charging and the necessity of making connections to a dirty battery are eliminated.

Use this handy charger to keep your batteries set for split-second starting even in sub-zero weather. For more information write Sec. A-11510-58, Appliance and Merchandise Dept., General Electric Co., Bridgeport, Conn.

GENERAL ELECTRIC

Radio Cops Run Obstacle Race

In Philadelphia radio police underwent a performance reminiscent of the good old campus cops days of the silent flickers. It was indeed a frantic half-hour, according to our Quaker City contrib' J. V. L.

It all started with Mrs. Mary Pierson, 31, who was expecting a baby. Help seemed slow in coming, and a neighbor's persistent calling prompted a radio message to Car 222 to hustle to Mrs. Pierson's home. Unfortunately, in a few minutes, Car 222 was put out of commission by a flat tire.

Car 297, summoned to pinch hit, set off for the Pierson home—but never got there. Motor trouble laid it low.

The radio then caught Car 169 and dispatched it—in time to assist Mrs. Pierson in the birth of a daughter.

By now the perspiring bluecoats had repaired the tire of Car 222 and it wheeled up in front of the Pierson domicile just in time to hear loud screams of "FIRE" from a neighbor.

The car's busy patrolman raced inside and battled a blaze in a mattress until the firemen arrived.

* * *

Sanford Dewey Reports—

Demon clipper, Sanford Dewey, contributes the following:

MODERN PAUL REVERE: A lumberjack on horseback dashed over ten miles of wood trails and roads of the Adirondack Mountains, above Colton, N. Y., in the middle of the night to reach the nearest telephone in order to summon firemen to a forest fire near a logging camp.

The rider, Donald Gilbo, was credited with saving 500 cords of pulpwood. Forest Ranger Ivan Ford in Colton rushed ten men to the scene, brought fire under control using pack-pumps and digging fire trails. The thick pine and spruce forest touched off an underground blaze that kept men on the job several days.

MUTUAL AID—NO END! When the Sancona Builders' Supply Company mill between Sandy Creek and Lacona, N. Y., burned to the ground in August, there was no dearth of firemen on the job.

Climaxing the end of fair week at Sandy Hook Creek, the fire siren interrupted a parade in which eleven volunteer fire departments were participating. In full dress uniforms, the companies sped to the fire, poured water from fifteen hose lines onto the flaming mill. Assisting Sandy Creek vamps were the departments from Mexico, Pulaski, Dexter, Great Bend, Adams, Orwell, Richland, Parish, Hannibal and Lafargeville.

MYSTERY OF THE DISAPPEARING FIRE! In Somerville, Mass., the Brothers were in considerable of a dither over a fire that "folded its tents like the Arabs and as silently stole away."

Later, it developed that the fire, which the local firemen sought in vain, was hauled away by the inconsiderate Boston and Maine Railroad.

After searching some time for a reported freight car fire in their area, Somerville fire headquarters telephoned the railroad for further particulars. The latter replied, in due time, that it knew all about the blaze, in fact it had hooked a locomotive to the burning car, hauled it under a railroad water tank, and doused it.

Water Fog Tests

(*Continued from page* 844)

some partitions were removed or pierced to hasten burning.

Twenty-two minutes after ignition the fire was going well and the entire house practically involved. Ladder with fog nozzle (used in preceding test) was extended and, 28-min. after start of the fire, water was applied at 100 psi, the ladder being swung over the top of the house with the nozzle pointing almost downward, for a period of 40-sec. In this brief time it was demonstrated conclusively that the discharge would easily control a larger fire than this dwelling if sufficient fog volume was applied. In the 40 sec., the fire decreased from maximum intensity to very low burning rate and extinguishment would have occurred if water fog discharge had not been stopped. All vertical heat radiation and sparks almost immediately ceased.

The fire was then permitted to rekindle and the house burned to the foundation.

Detailed operations of preparing the structure, ignition, fighting the fire and decribing operations were directed by Chiefs Spencer and Heinz, and his assistant, Deputy Chief Collins, officers and members of both departments, and Mr. James Ryan, assisted by engineering representatives of the Rockwood Sprinkler Company.

You can't beat
BODY-GUARD
for cold weather
PROTECTION!

Here are 8 reasons why

1. Hard-wear snaps and rings with a snap button. Keeps out wind and water.
2. Outside duck—olive drab or black. Water repellent.
3. Patch pockets with flap outside, and inside pocket for flashlight.
4. Sleeves corduroy reinforced, draw strap and wristlets.
5. Corduroy collar for warmth and comfort.
6. Coat double stitched throughout.
7. Blanket inter-lining. Wears indefinitely.
8. Inner lining of rubberized fabric. And they cost so little, too.

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We are again on full peacetime production and can now make immediate delivery.

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Any Fireman can have a Catalog by writing—

BODY-GUARD MANUFACTURING CO.
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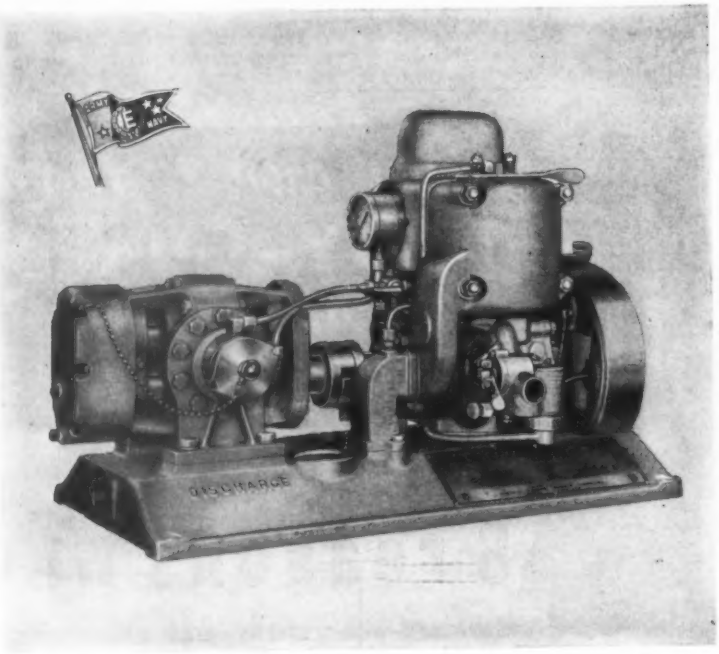
TYPE "Y"
Portable Pumper



For weight and size, Pacific Marine Type "Y" is the most powerful portable pumper yet built. Base 24 x 12 inches; height 13 inches; net weight complete, ready to operate, 70 pounds.

CAPACITY

Pressure	100	125	150	175	200	225
Gallons per Minute	63	59	53	46	40	20

We are now able to make prompt delivery of Type "Y" and Type "NY" Pumpers, accessories and general fire-fighting equipment.

FIRE-FIGHTING EQUIPMENT DIVISION of the

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SEATTLE, Washington

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FIRE ENGINEERING

NOVEMBER, 1945

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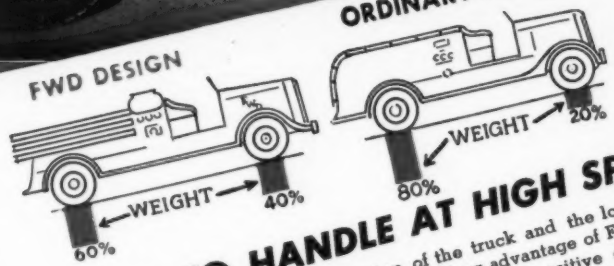
Browne Mfg. Co., Stewart R.	883
Buffalo Fire Appliance Corp.	813
C-O Two Fire Equipment Co.	863
Cairns & Bro.	890
Cardox Corp.	879
Carpenter Mfg. Co.	890
Central Fire Truck Corp.	886
Circul-Air Corp.	876
Cooper Hose Jacket Co.	890
Curtis & Sons, L. N.	893
Darley & Co., W. S.	839
Doolittle Radio, Inc.	885
E & J Mfg. Co.	816
Eastman Company, Inc., Samuel	878
Elkhart Brass Mfg. Co.	857
Emerson Co., J. H.	Inside Front Cover
Eureka Fire Hose Div., U. S. Rubber Co.	858
Federal Electric Co., Inc.	811
Fog Nozzle Co.	Back Cover
Food Machinery Corp.	887
Four Wheel Drive Auto Co.	Inside Back Cover
Fulton Bag & Cotton Mills	894
Fyr-Fyter Co.	894
Gamewell Company	826
General Detroit Corp.	853
General Electric Co.	896
Gebauer Chemical Co.	892
Goodall Rubber Co.	866
Guided Radio Corp.	861
Hahn Motors, Inc.	882
Hale Fire Pump Co., Inc.	823
Homelite Corp.	867
Howe Fire Apparatus Co.	893
Janesville Apparel Co.	884
Kidde & Co., Walter	824
Koehler Mfg. Co.	880
M. & H. Valve & Fittings Co.	894
McIntire Brass Works	884
Mack Mfg. Corp.	817
Manhattan Rubber Mfg. Div., of Raybestos-Manhattan, Inc.	896
Mearl Corp.	869
Mid-States Equipment Co.	880
Midwestern Mfg. Co.	873
Mine Safety Appliance Co.	868
National Foam System, Inc.	822
Oren Fire Apparatus Co.	877
Pacific Marine Supply Co.	898
Portable Light Co.	894
Porter, Inc., H. K.	872
Powhatan Brass & Iron Works	862
Pyrene Mfg. Co.	870
Quaker Rubber Corp.	871
Randolph Laboratories, Inc.	820
Rockwood Sprinkler Co.	881
Ross Valve Mfg. Co.	888
Seagrave Corp.	859
Scott Aviation Corp.	814-815
Sleeper Co., George E.	865
Smith, A.	895
Smith & Co., D. B.	864
Southern Switch & Signal Co.	896
Sterling Siren Fire Alarm Co., Inc.	878
Superior Fire Equipment Corp.	892
U. S. Motors Corp.	895
Ward-LaFrance Truck Div., Great American Ind., Inc.	825
Waterous Company	856
Wentworth-Forman Co., Inc.	892
Wooster Brass Co.	892

FWD's FIRST

in Speed
in Safety
in Power

EASIER TO HANDLE AT HIGH SPEEDS



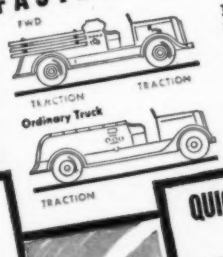
Properly balanced weight distribution of the truck and the load on all four wheels of FWD Fire Trucks, is an outstanding advantage of FWD design and basically balanced construction, which provides positive driver-control at even the highest speeds. In any emergency, FWDs handle perfectly. The weight distribution to front axle is used in powered traction for greater safety and increased performance. Speed, safety and power count in fire fighting apparatus. FWDs have *all three* at their best! WRITE FOR LITERATURE.

THE FOUR WHEEL DRIVE AUTO COMPANY, Clintonville, Wis.

Canadian Factory: KITCHENER, ONTARIO

FWDs Go Where Other Vehicles Fail
NO ROADS TOO TOUGH OR STEEP FOR FWDs

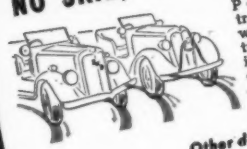
FASTER GET-AWAY



FWD power on all four wheels gets a four-way grip on any road and assures faster get-away.

Other designs, lacking drive on front wheels, lose time in get-away.

NO SKID, NO SLIP, NO SLUE!



Powered steering traction holds front wheels to direction of turns, thus minimizing skid-danger. Skidding tests, conducted on ice show 50% less skidding.

FWD... non-skid.

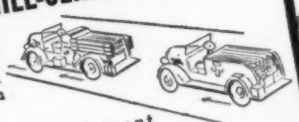
Other designs more liable to skid.

QUICK, POSITIVE, SAFE EMERGENCY STOPS

FWDs have two separate and independent 4-wheel braking systems, with brake drums on each wheel. Combined with properly balanced weight distribution, these provide the most effective braking possible.

GREATER HILL-CLIMBING ABILITY

FWD's front wheel pulling power increases hill-climbing ability. Reserve traction in all 4 wheels.



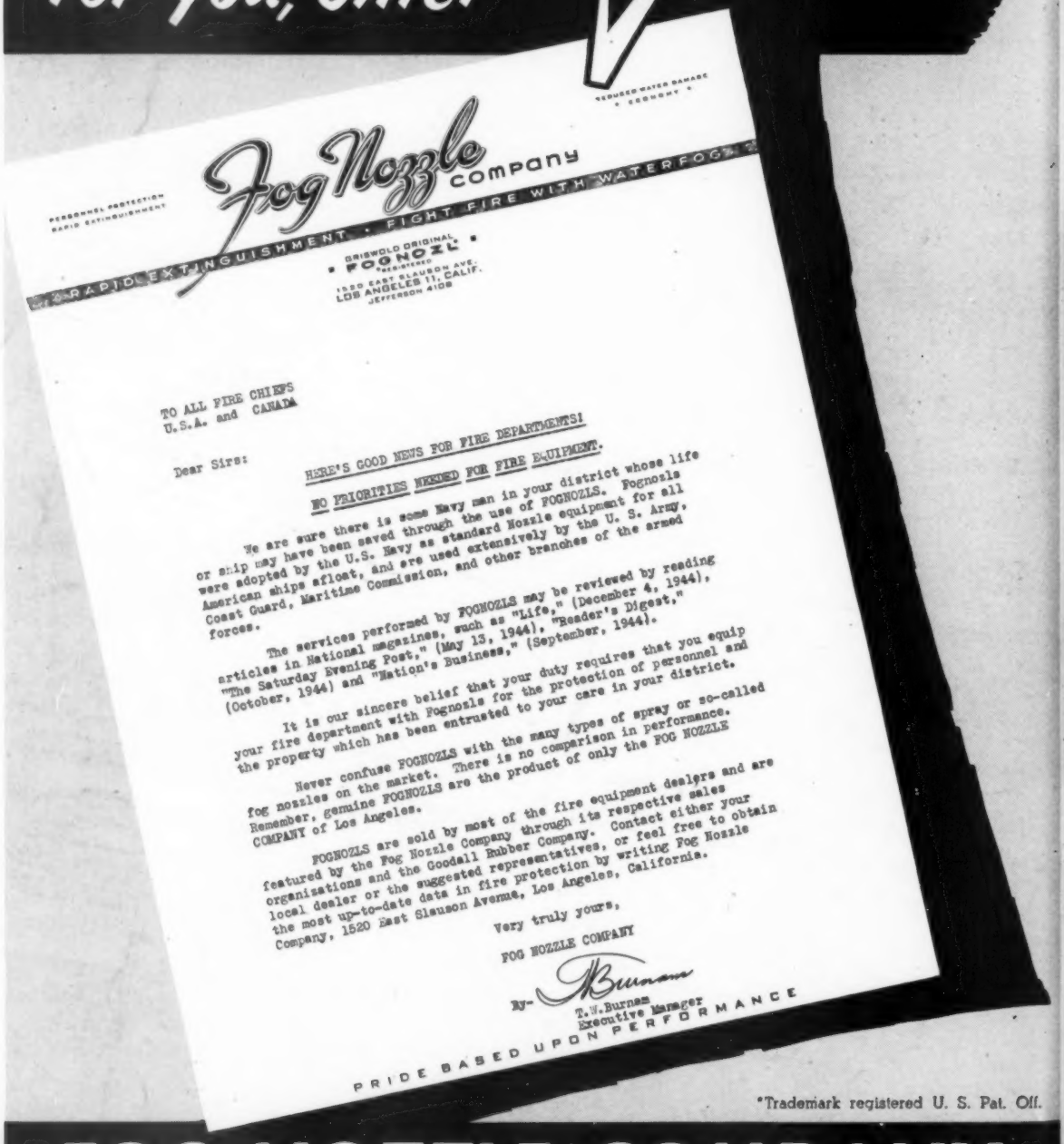
Non-powered front wheels "block" progress of truck on inclines, reducing steep hill-climbing ability.

FWD

FOUR-WHEEL-DRIVE *Fire Apparatus*

GETS TO FIRES FASTER and SAFER!

"Here's an 'AIRMAIL-SPECIAL' for you, Chief"



REDUCED WATER DAMAGE • ECONOMY •

PERSONNEL PROTECTION
RAPID EXTINGUISHMENT

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TO ALL FIRE CHIEFS
U.S.A. and CANADA

Dear Sirs:

HERE'S GOOD NEWS FOR FIRE DEPARTMENTS!

NO PRIORITIES NEEDED FOR FIRE EQUIPMENT.

We are sure there is some Navy man in your district whose life or ship may have been saved through the use of FOGNOZLS. Fognozls were adopted by the U.S. Navy as standard Nozzle equipment for all American ships afloat, and are used extensively by the U. S. Army, Coast Guard, Maritime Commission, and other branches of the armed forces.

The services performed by FOGNOZLS may be reviewed by reading articles in National magazines, such as "Life," (December 4, 1944), "The Saturday Evening Post," (May 13, 1944), "Reader's Digest," (October, 1944) and "Nation's Business," (September, 1944).

It is our sincere belief that your duty requires that you equip your fire department with Fognozls for the protection of personnel and the property which has been entrusted to your care in your district.

Never confuse FOGNOZLS with the many types of spray or so-called fog nozzles on the market. There is no comparison in performance. Remember, genuine FOGNOZLS are the product of only the FOG NOZZLE COMPANY of Los Angeles.

FOGNOZLS are sold by most of the fire equipment dealers and are featured by the Fog Nozzle Company through its respective sales organizations and the Goodall Rubber Company. Contact either your local dealer or the suggested representatives, or feel free to obtain the most up-to-date data in fire protection by writing Fog Nozzle Company, 1520 East Slauson Avenue, Los Angeles, California.

Very truly yours,

FOG NOZZLE COMPANY

By- T.W.Burnam
Executive Manager

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